

TOSHIBA

SERVICE MANUAL

LCD Color Television

32CV505D

Ver. 2.01

This model is classified as a green product (*1), as indicated by the underlined serial number. This Service Manual describes replacement parts for the green product. When repairing this green product, use the part(s) described in this manual and lead-free solder (*2). For (*1) and (*2), refer to **GREEN PRODUCT PROCUREMENT** and **LEAD-FREE SOLDER**.

GREEN PRODUCT PROCUREMENT

The EC is actively promoting the WEEE & RoHS Directives that define standards for recycling and reuse of Waste Electrical and Electronic Equipment and for the Restriction of the use of certain Hazardous Substances. From July 1, 2006, the RoHS Directive will prohibit any marketing of new products containing the restricted substances.

Increasing attention is given to issues related to the global environmental. Toshiba Corporation recognizes environmental protection as a key management tasks, and is doing its utmost to enhance and improve the quality and scope of its environmental activities. In line with this, Toshiba proactively promotes Green Procurement, and seeks to purchase and use products, parts and materials that have low environmental impacts.

Green procurement of parts is not only confined to manufacture. The same green parts used in manufacture must also be used as replacement parts.

LEAD-FREE SOLDER

This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repair of this product.

WARNING: This product is manufactured using lead free solder.
DO NOT USE LEAD BASED SOLDER TO REPAIR THIS PRODUCT!

The melting temperature of lead-free solder is higher than that of leaded solder by 86°F to 104°F (30°C to 40°C). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product especially when soldering large components, through-hole pins, and on PCBs as the level of heat required to melt lead-free solder is high.

SAFETY INSTRUCTION

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

Safety Precaution

WARNING: SERVICING SHOULD NOT BE ATTEMPTED BY ANYONE UNFAMILIAR WITH THE NECESSARY PRECAUTIONS ON THIS RECEIVER. THE FOLLOWING ARE THE NECESSARY PRECAUTIONS TO BE OBSERVED BEFORE SERVICING THIS CHASSIS.

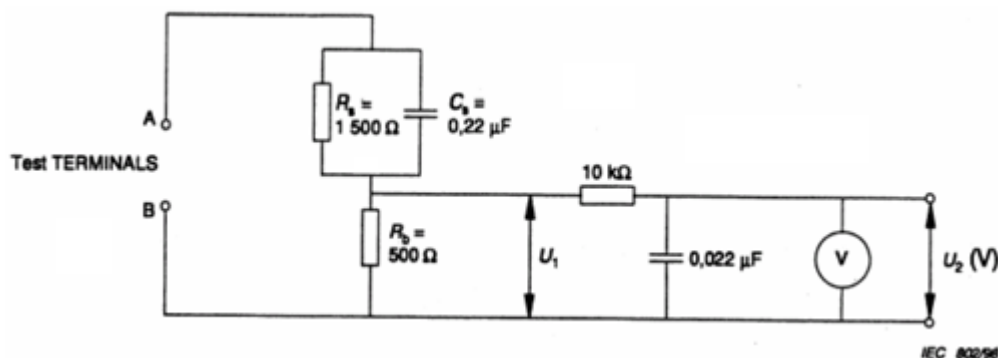
1. An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Always disconnect the power plug before any disassembling of the product. It may result in electrical shock.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as nonmetallic control knobs, insulating covers, shields, isolation resistor-capacitor network, etc.
4. Always keep tools, components of the product, etc away from the children, These items may cause injury to children.
5. Depending on the model, use an isolation transformer or wear suitable gloves when servicing with the power on, and disconnect the power plug to avoid electrical shock when replacing parts. In some cases, alternating current is also impressed in the chassis, so electrical shock is possible if the chassis is contacted with the power on.
6. Always use the replacement parts specified for the particular model when making repairs. The parts used in products require special safety characteristics such as

inflammability, voltage resistance, etc. therefore, use only replacement parts that have these same characteristics. Use only the specified parts when the ⚠ mark is indicated in the circuit diagram or parts list.

7. Parts mounting and routing dressing of wirings should be the same as that used originally. For safety purposes, insulating materials such as isolation tube or tape are sometimes used and printed circuit boards are sometimes mounted floating. Also make sure that wirings is routed and clamped to avoid parts that generate heat and which use high voltage. Always follow the manufactured wiring routes / dressings.
8. Always ensure that all internal wirings are in accordance before re-assembling the external casing after a repairing completed. Do not allow internal wiring to be pinched by cabinets, panels, etc. Any error in reassembly or wiring can result in electrical leakage, flame, etc., and may be hazardous.
9. NEVER remodel the product in any way. Remodeling can result in improper operation, malfunction, or electrical leakage and flame, which may be hazardous.
10. Touch current check. (After completing the work, measure touch current to prevent an electric shock.)
 - ┆ Plug the AC cord directly into the AC outlet. Do NOT use an isolation transformer for this check.
 - ┆ Connect a measuring network for touch currents between each exposed metallic part on the set and a good earth ground such as a water pipe.

Annex D
(normative)

Measuring network for TOUCH CURRENTS



Resistance values in ohms (Ω).

V: Voltmeter or oscilloscope
(r.m.s. or peak reading)

Input resistance : $\geq 1 \text{ M}\Omega$

Input capacitance : $\leq 200 \text{ pF}$

Frequency range : 15 Hz to 1 MHz and d.c. respectively

Note: Appropriate measures should be taken to obtain the correct value in case of non sinusoidal waveforms.

The measuring instrument is calibrated by comparing the frequency factor of U_2 with the solid line in figure F.2 of IEC 60990 at various frequencies. A calibration curve is constructed showing the deviation of U_2 from the ideal curve as a function of frequency.

TOUCH CURRENT = $U_2/500$ (peak value).

- i The potential at any point (TOUCH CURRENT) expressed as voltage U_1 and U_2 does not exceed the following value:

The part or contact of a TERMINAL is not HAZARDOUS LIVE if:

- The open-circuit voltage should not exceed 35 V (peak) a.c. or 60 V d.c. or, if a) is not met.
- The measurement of the TOUCH CURRENT shall be carried out in accordance with IEC 60990, with the measuring network described in **Annex D** of this standard.

The TOUCH CURRENT expressed as voltages U_1 and U_2 , does not exceed the following values:

- for a.c. : $U_1 = 35 \text{ V}$ (peak) and $U_2 = 0.35 \text{ V}$ (peak);
- for d.c. : $U_1 = 1.0 \text{ V}$

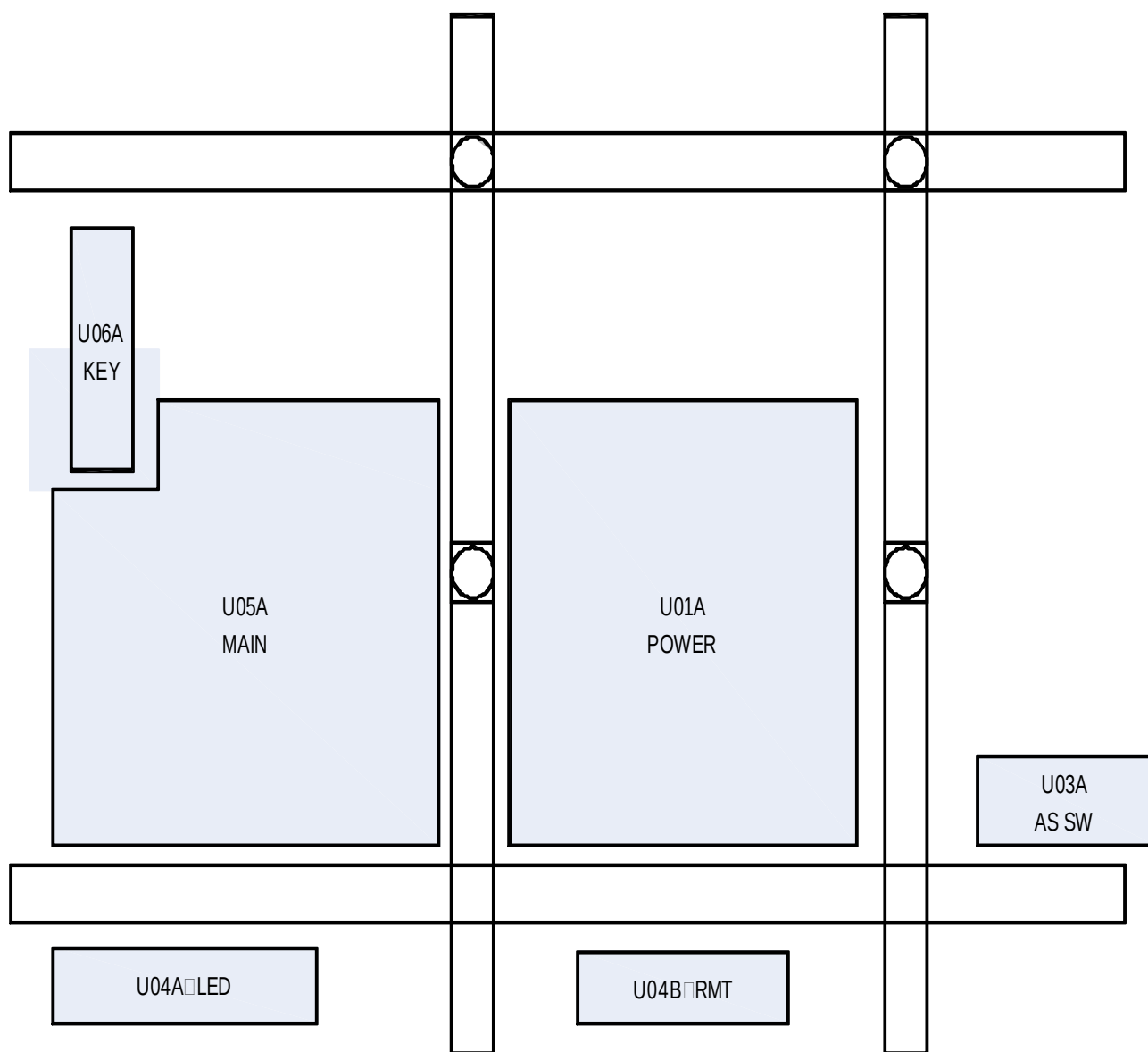
Note: The limit values of $U_2 = 0.35 \text{ V}$ (peak) for a.c. and $U_1 = 1.0 \text{ V}$ for d.c. correspond to the values 0.7 mA (peak) a.c. and 2.0 mA d.c.

Product Safety Notice

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create electrical shock, fire, or other hazards.

PCB LAYOUT



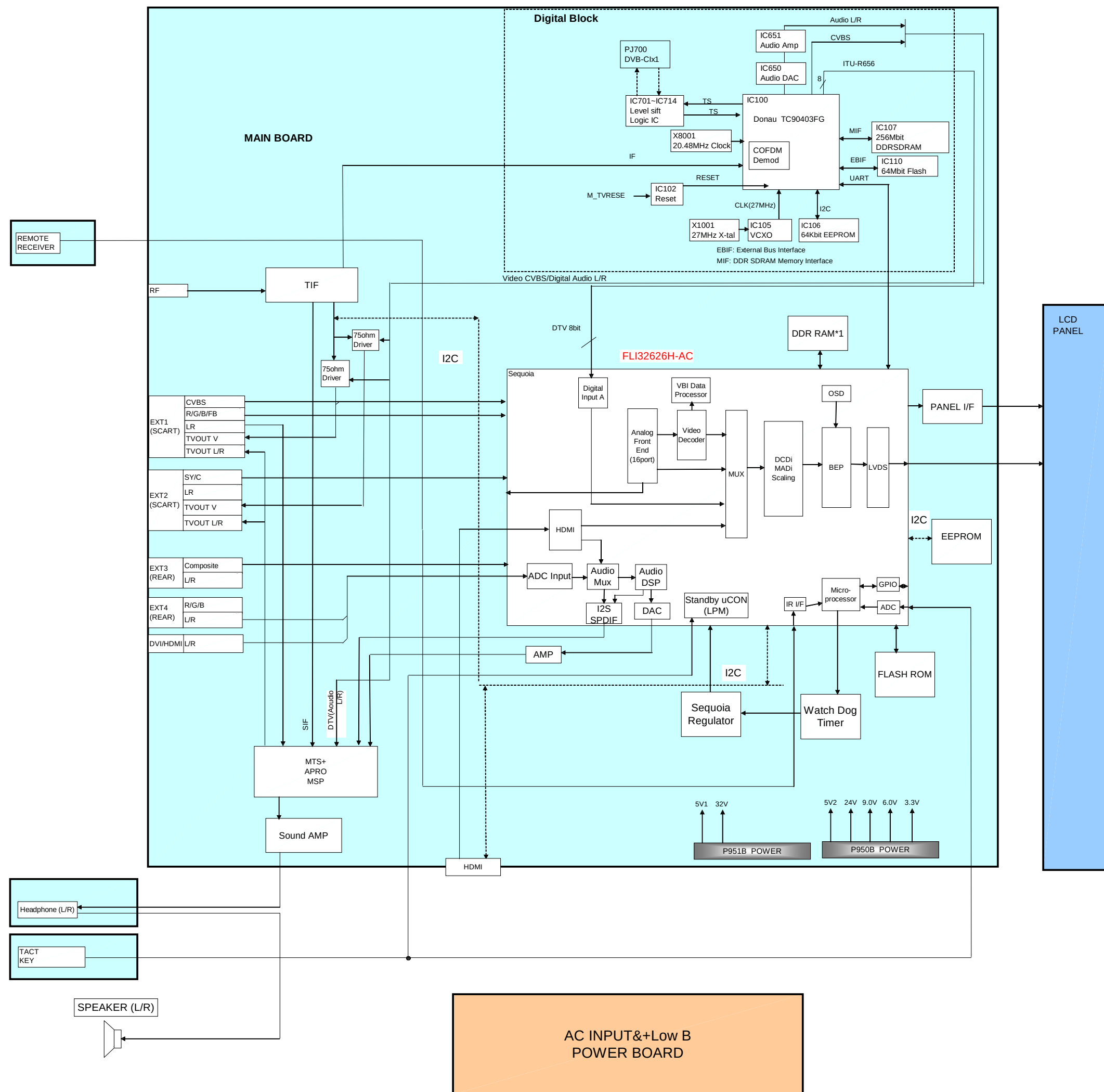
IMPORTANT NOTICE

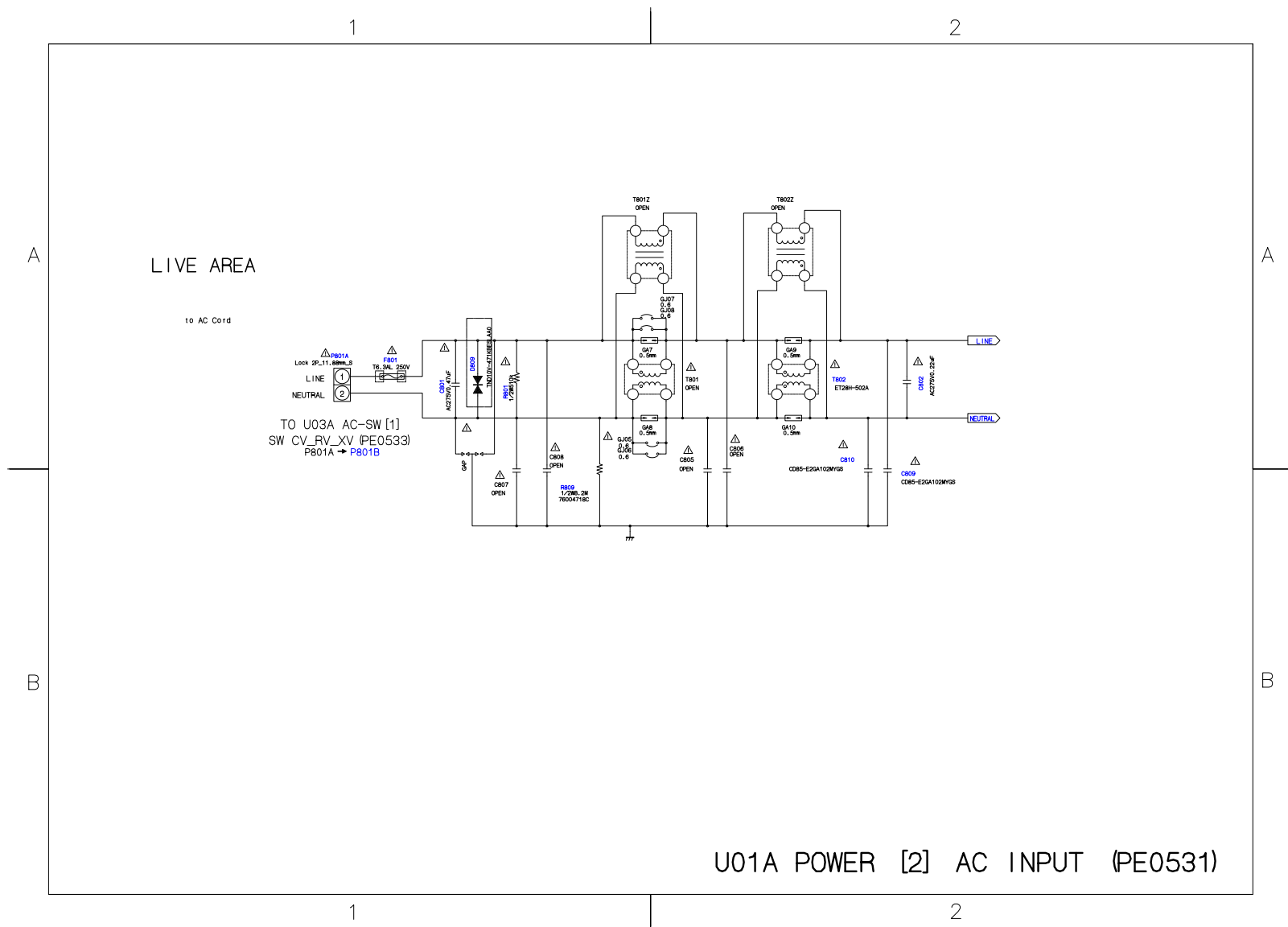
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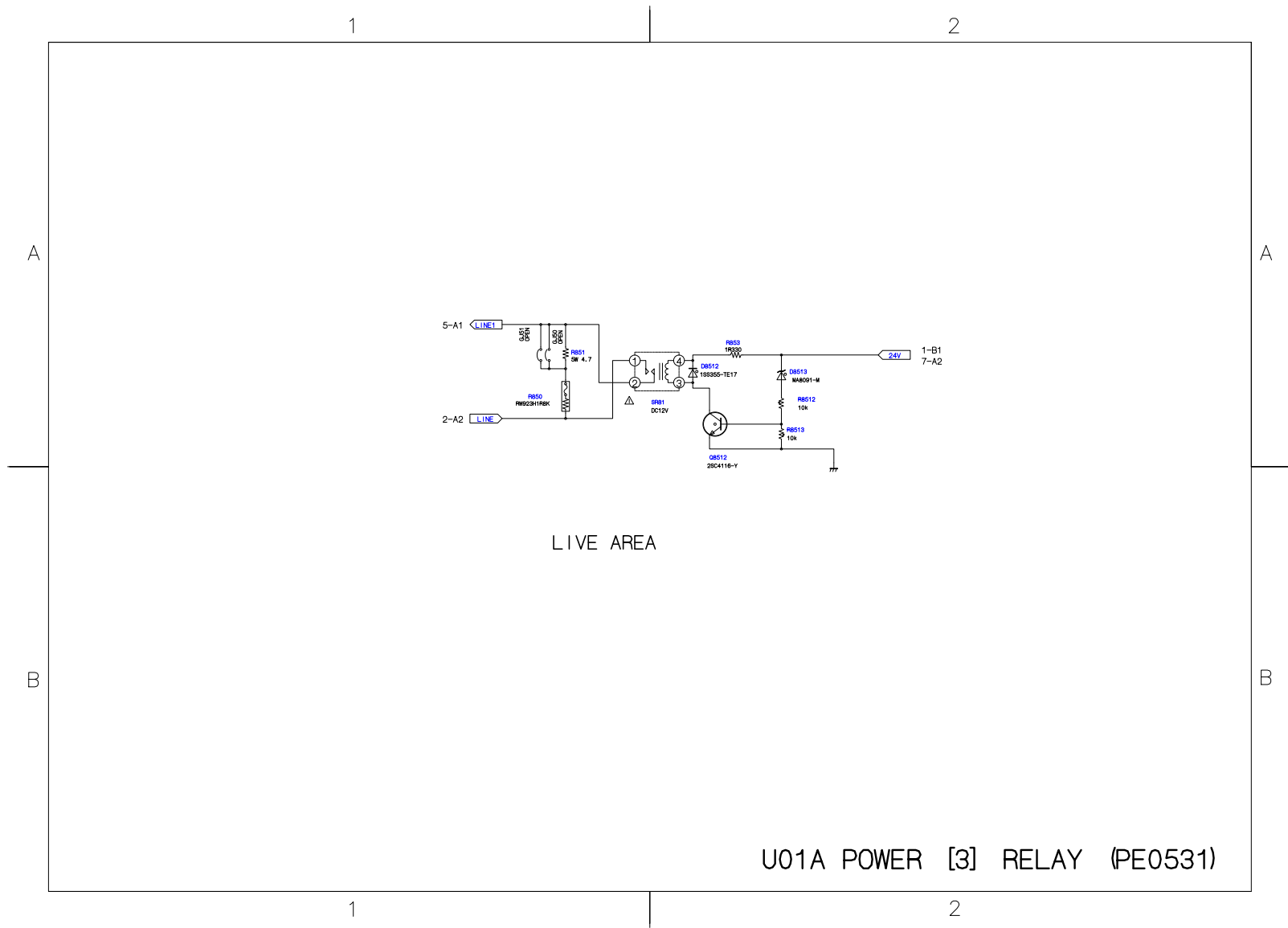
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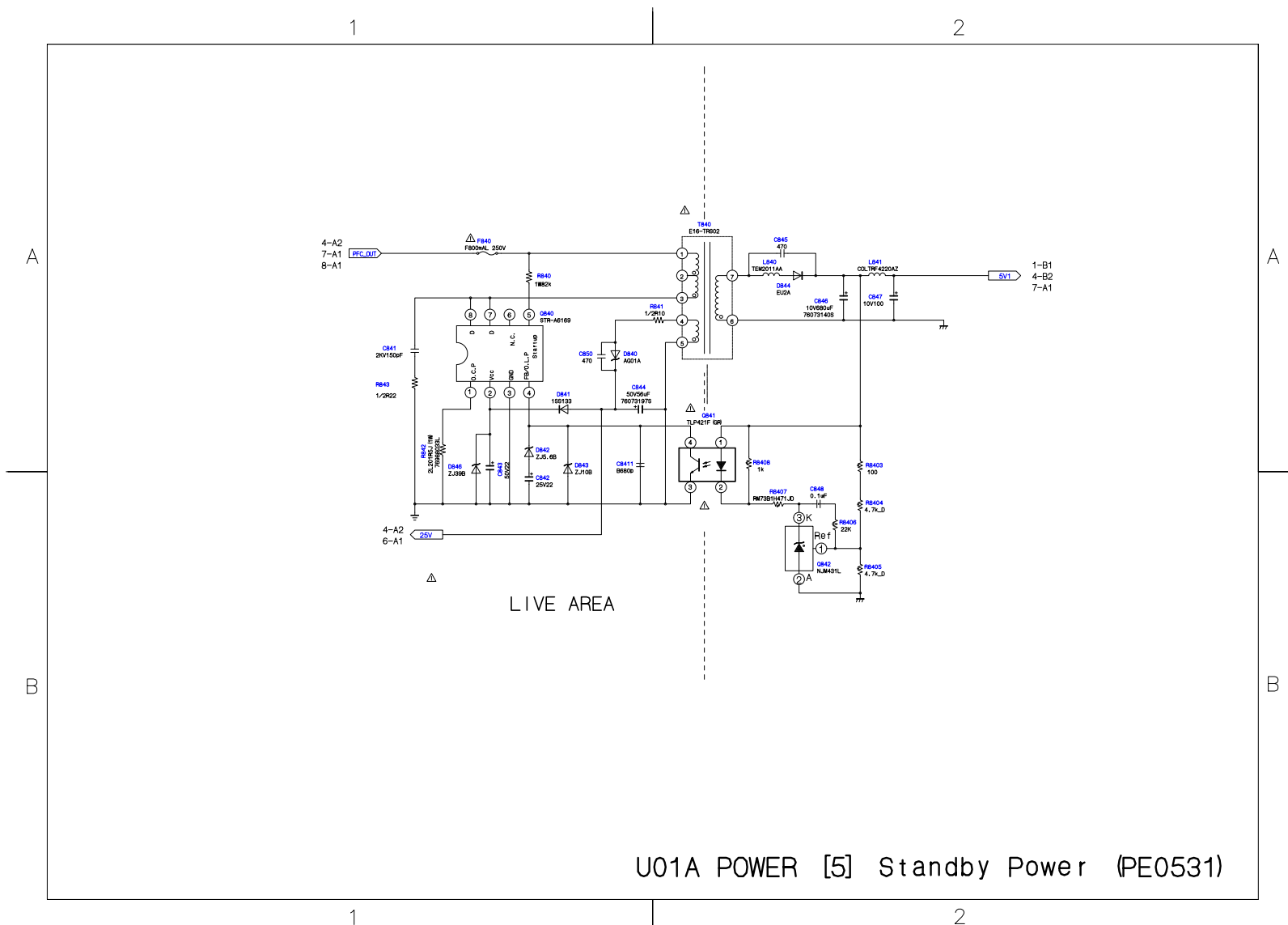
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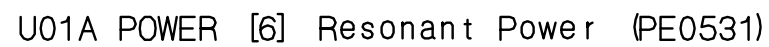
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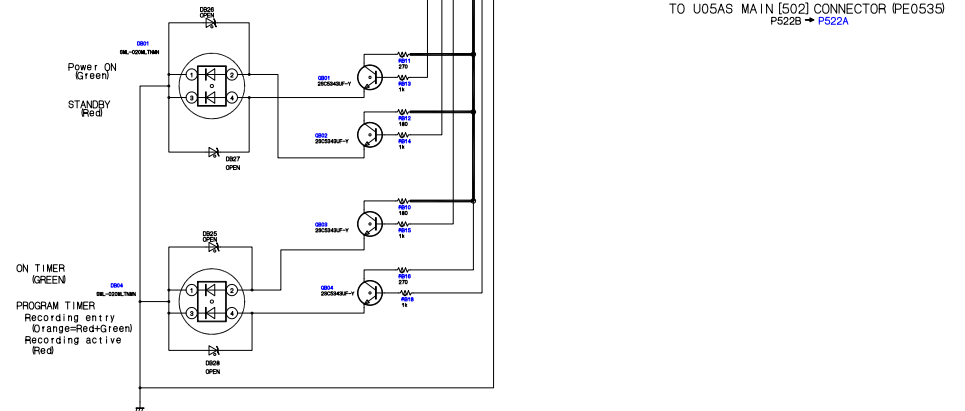




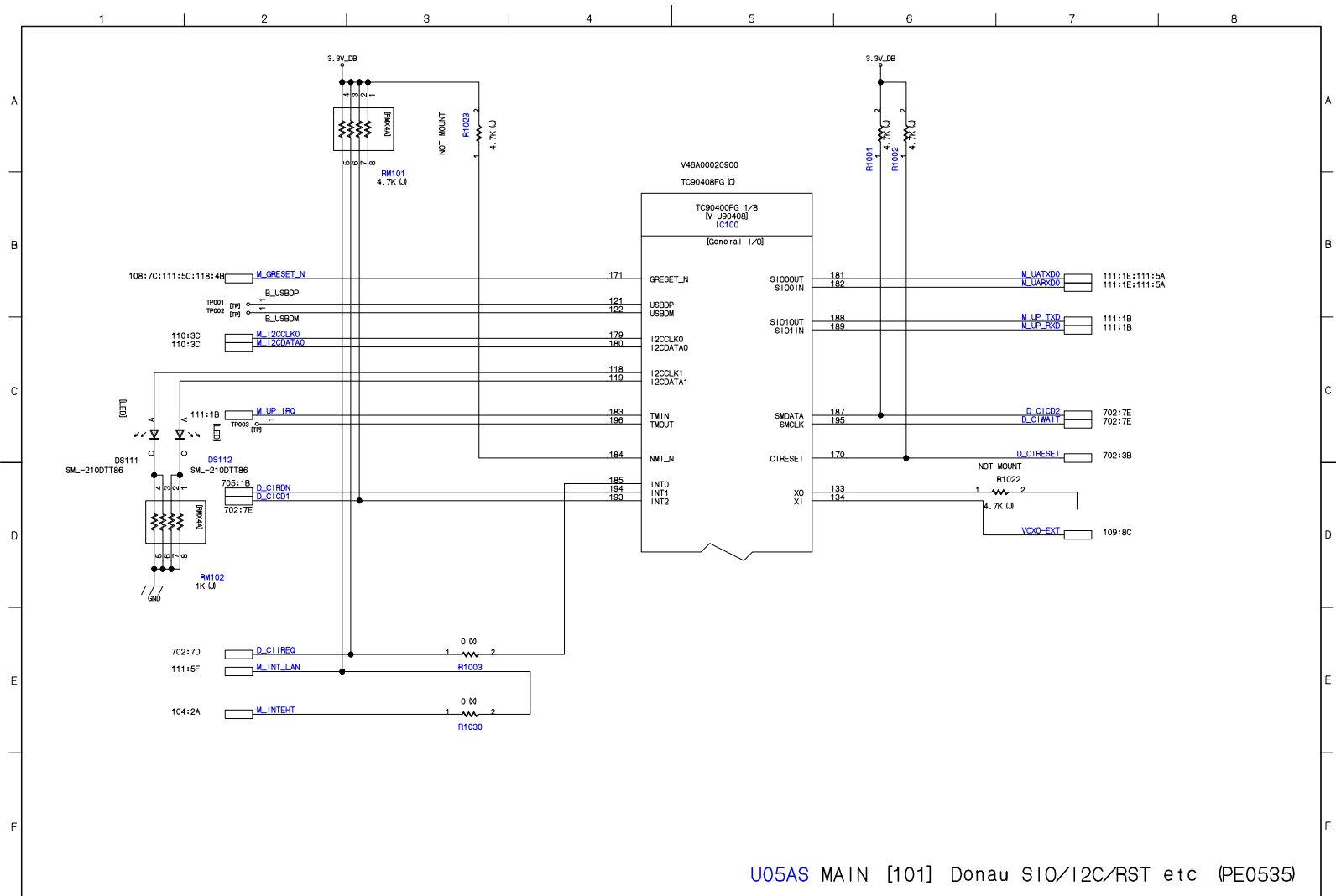


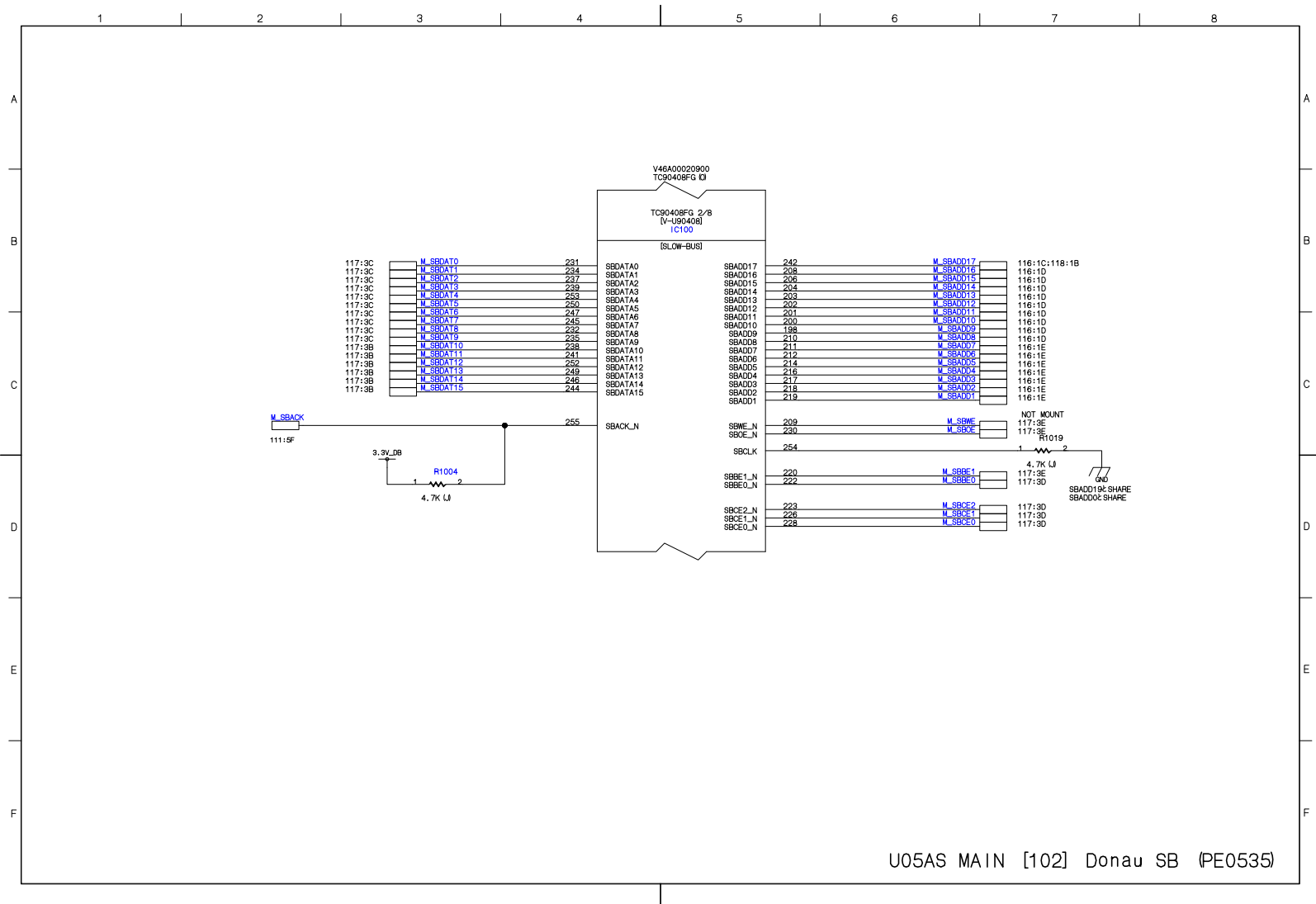


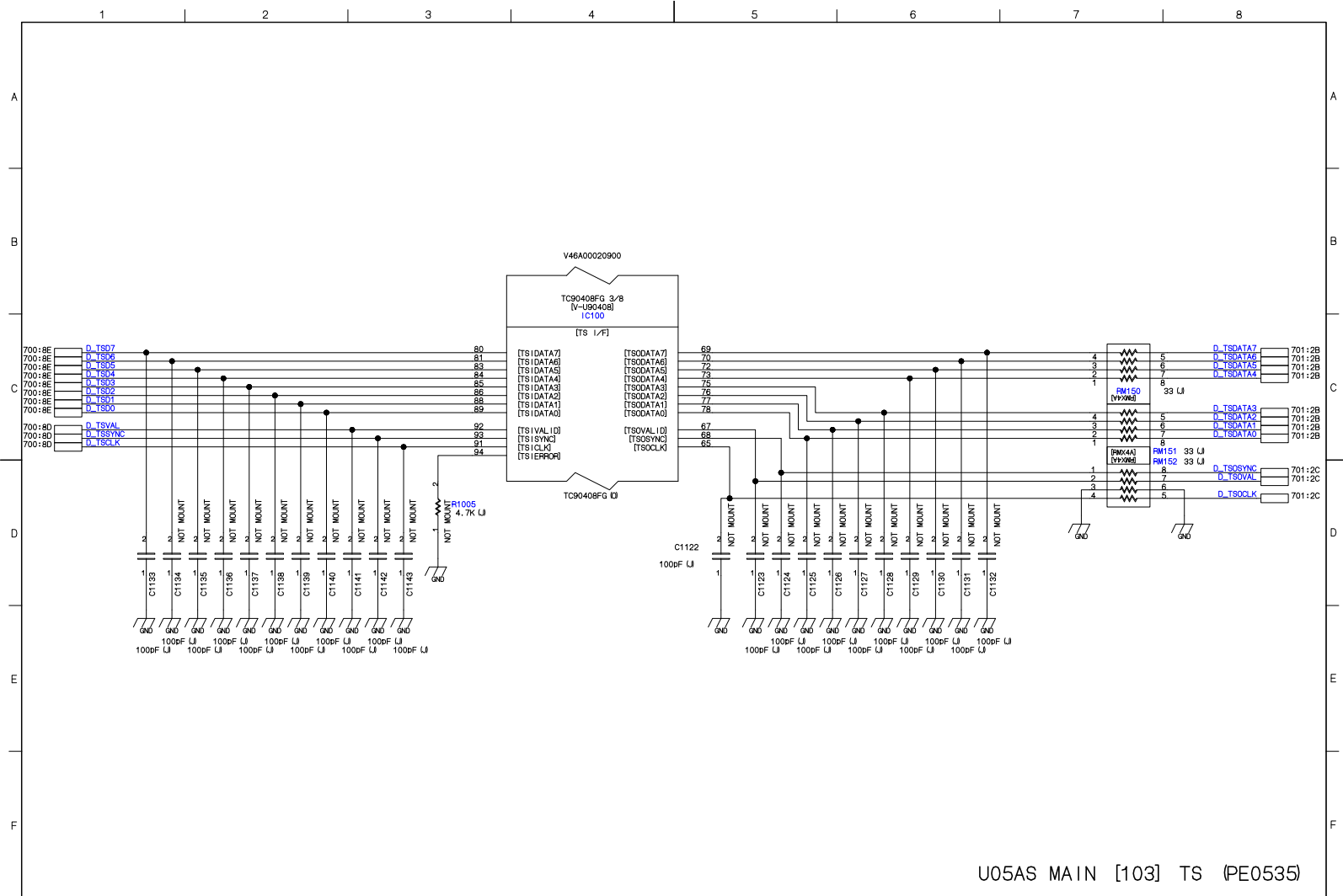
for CV/RV/XV505D SERIES

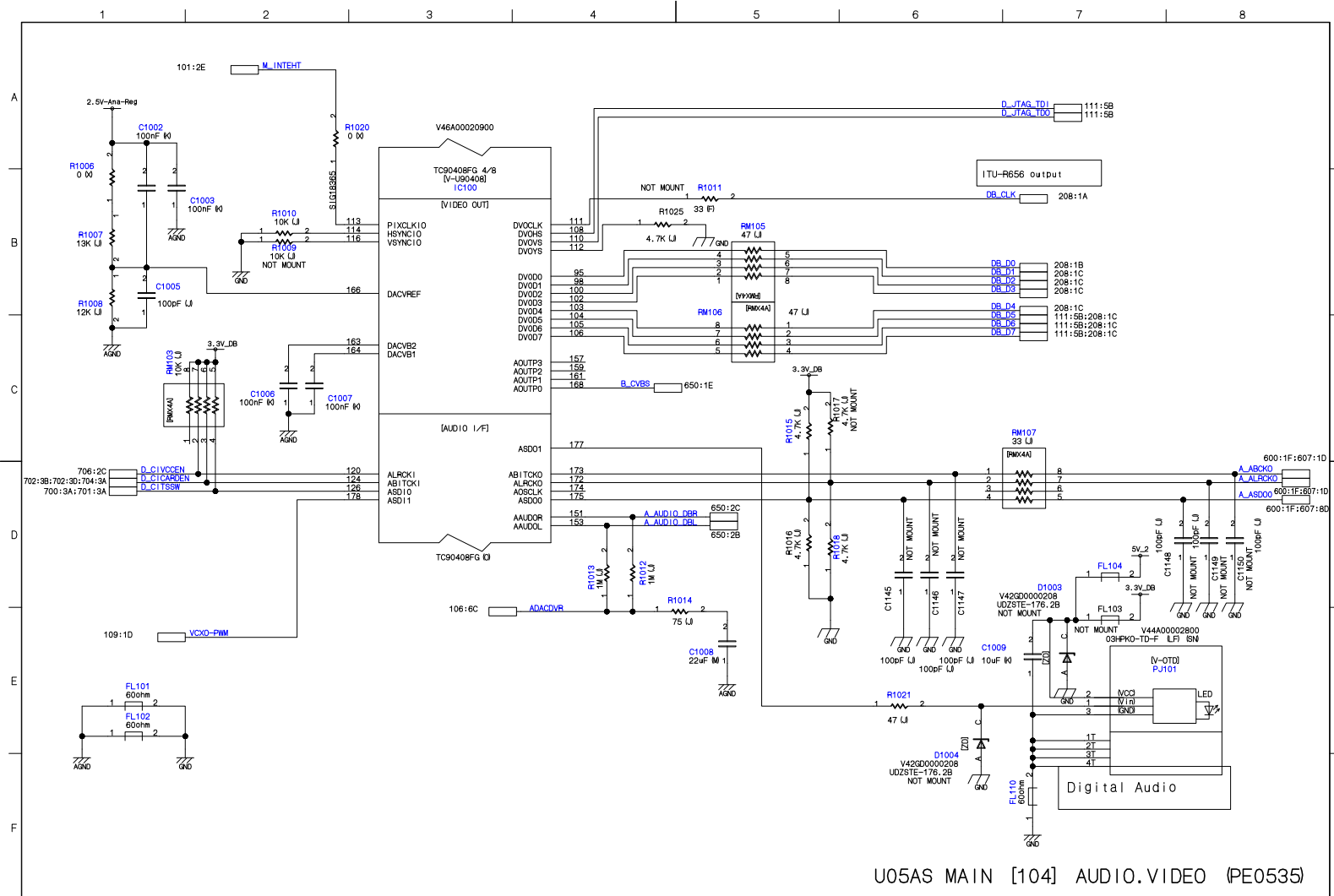


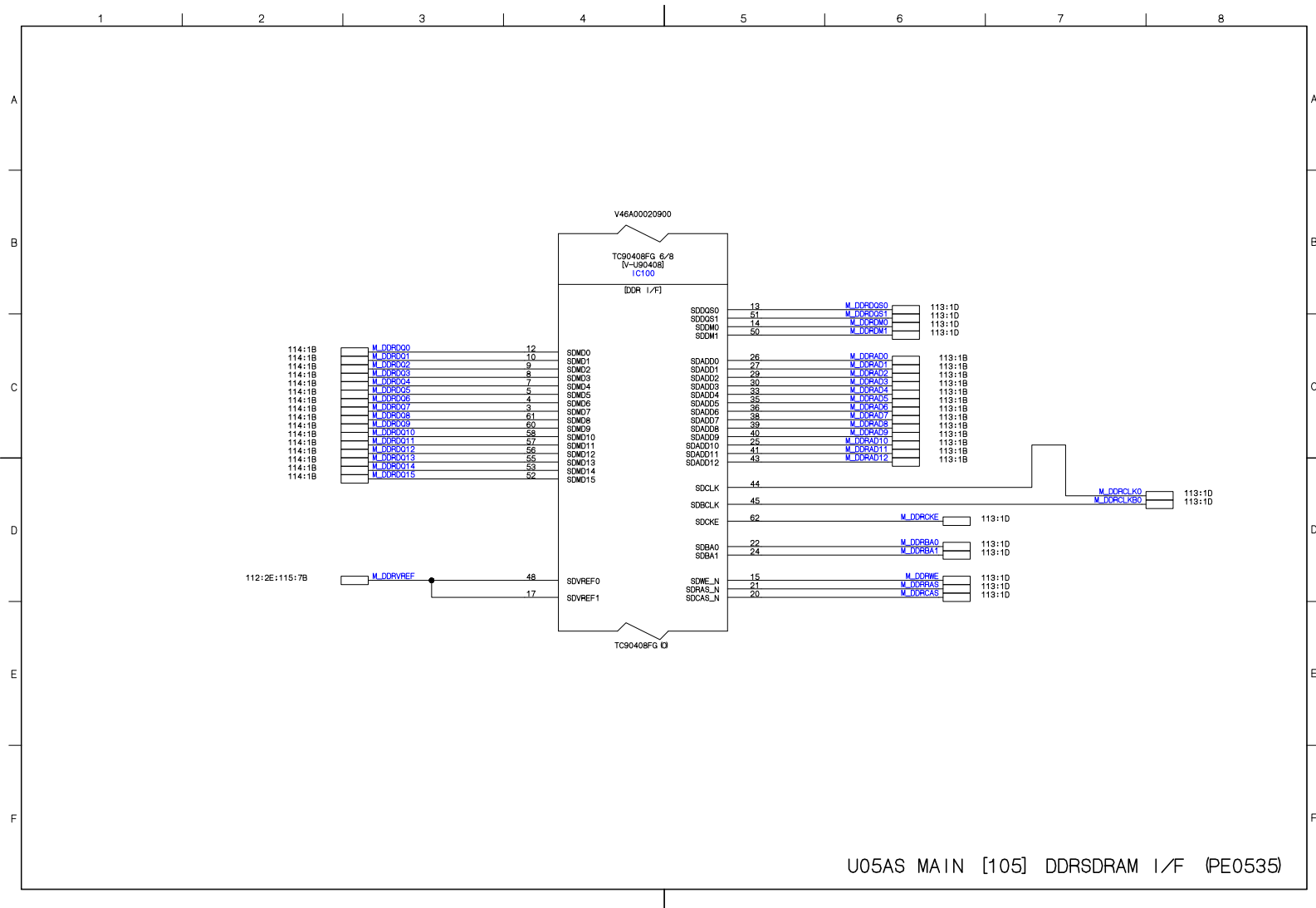
U04A LED [1] LED (PE0534)

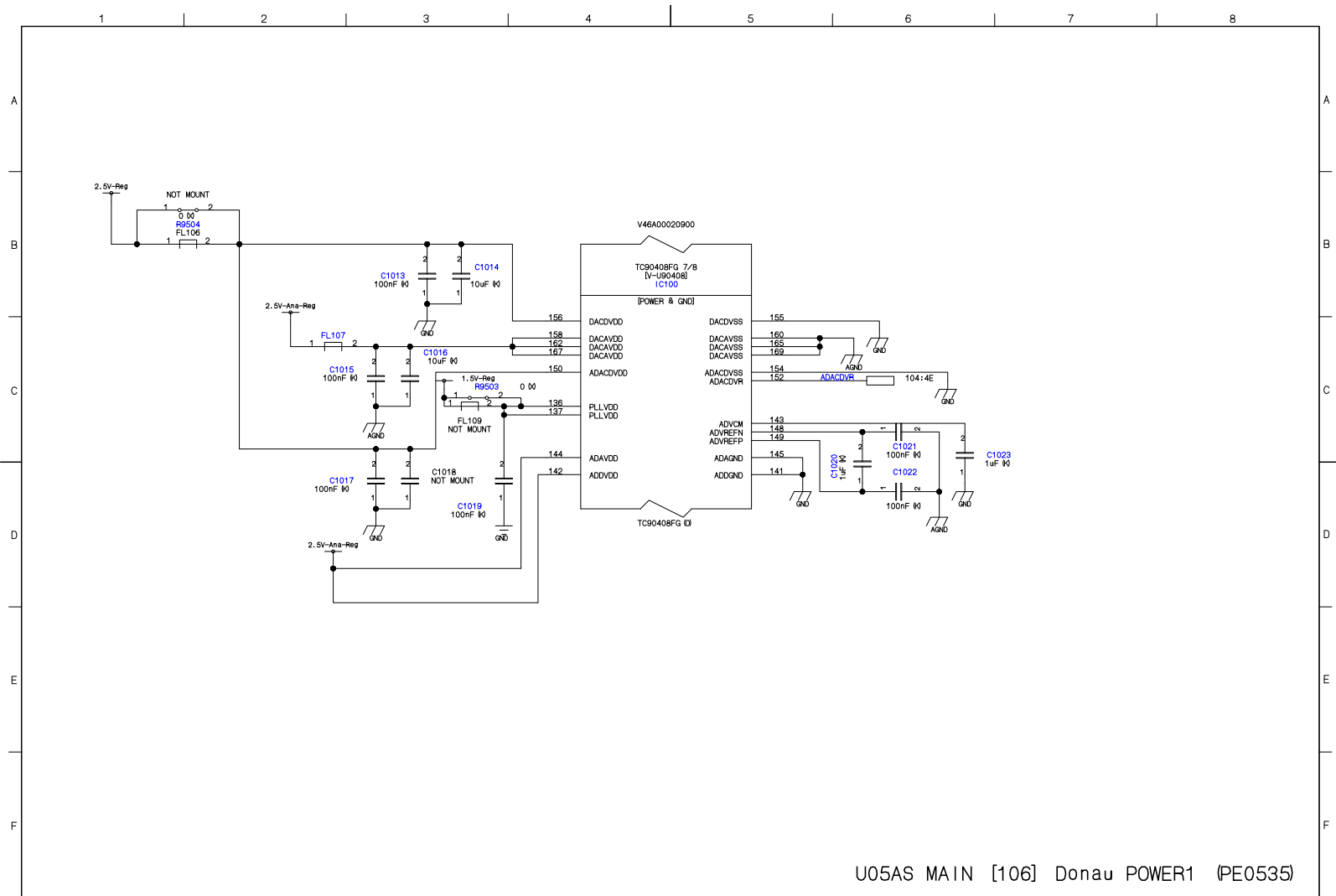


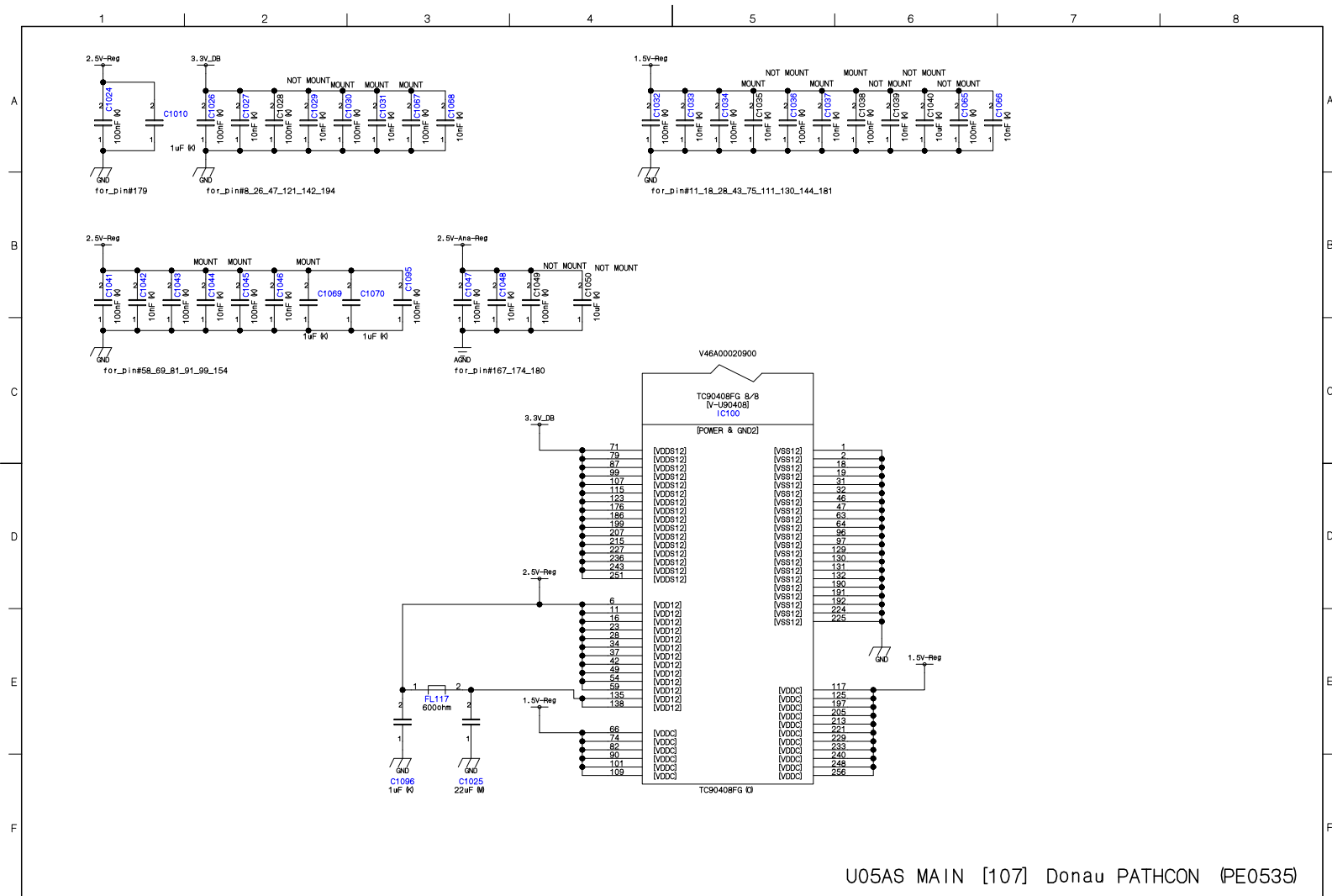


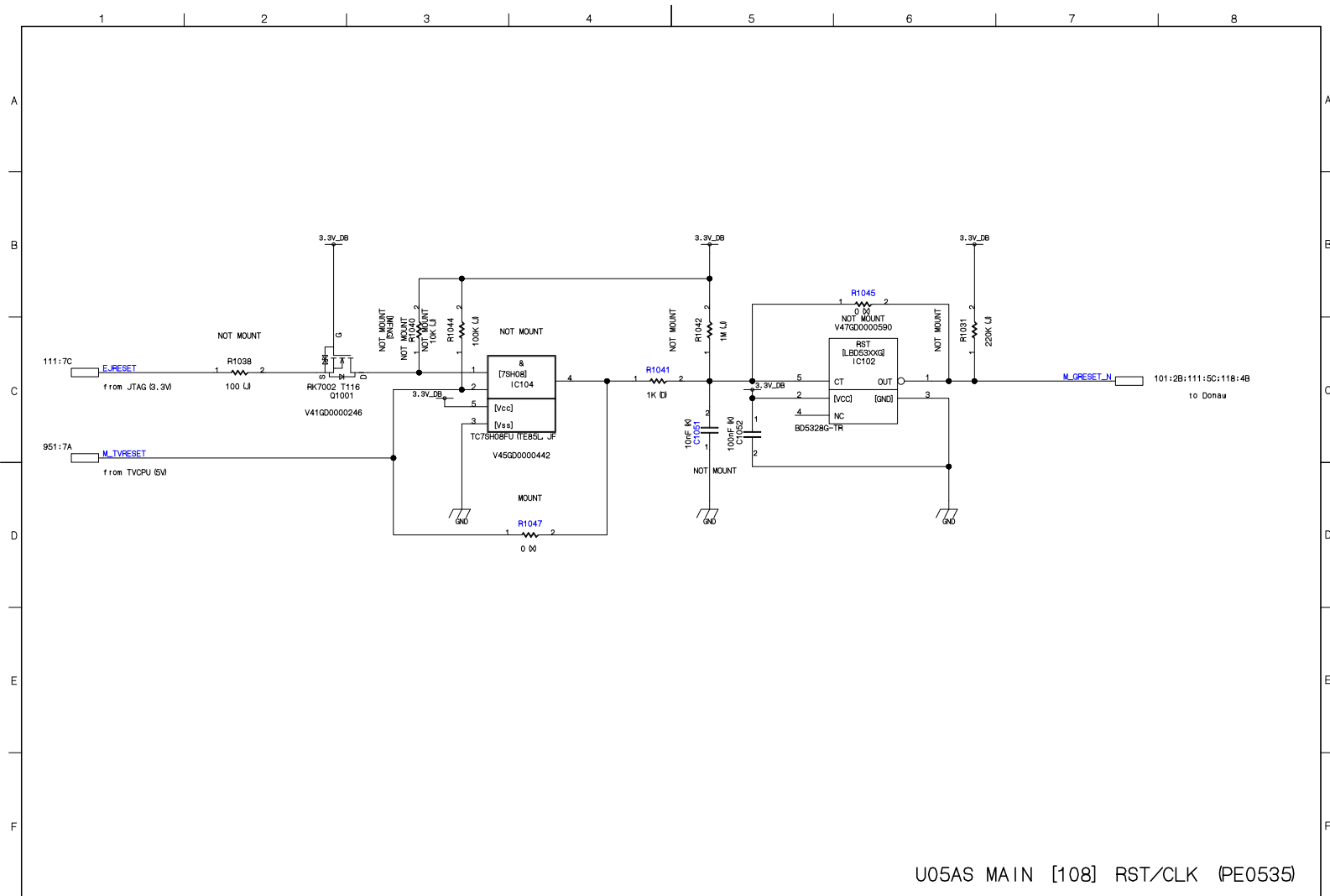


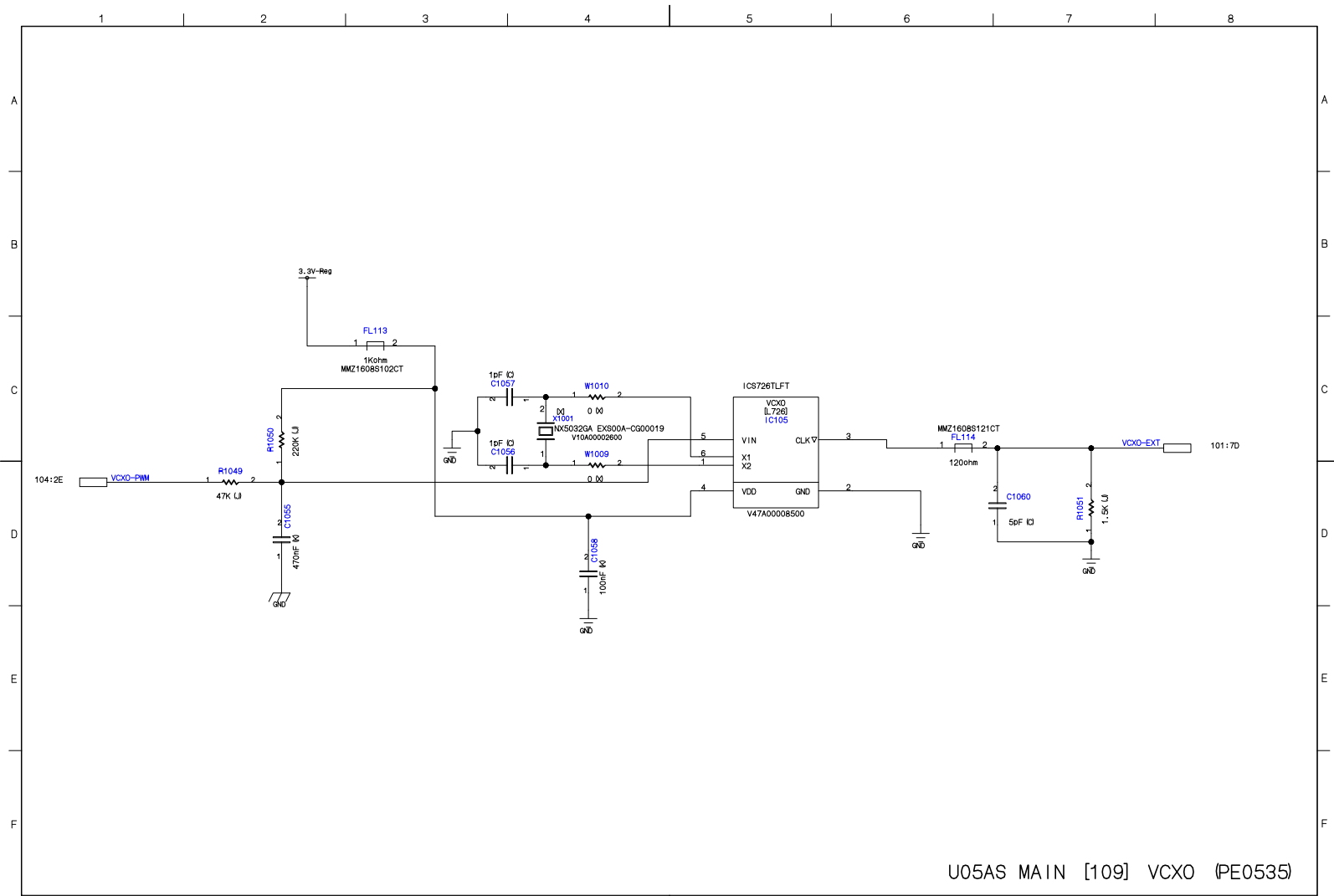


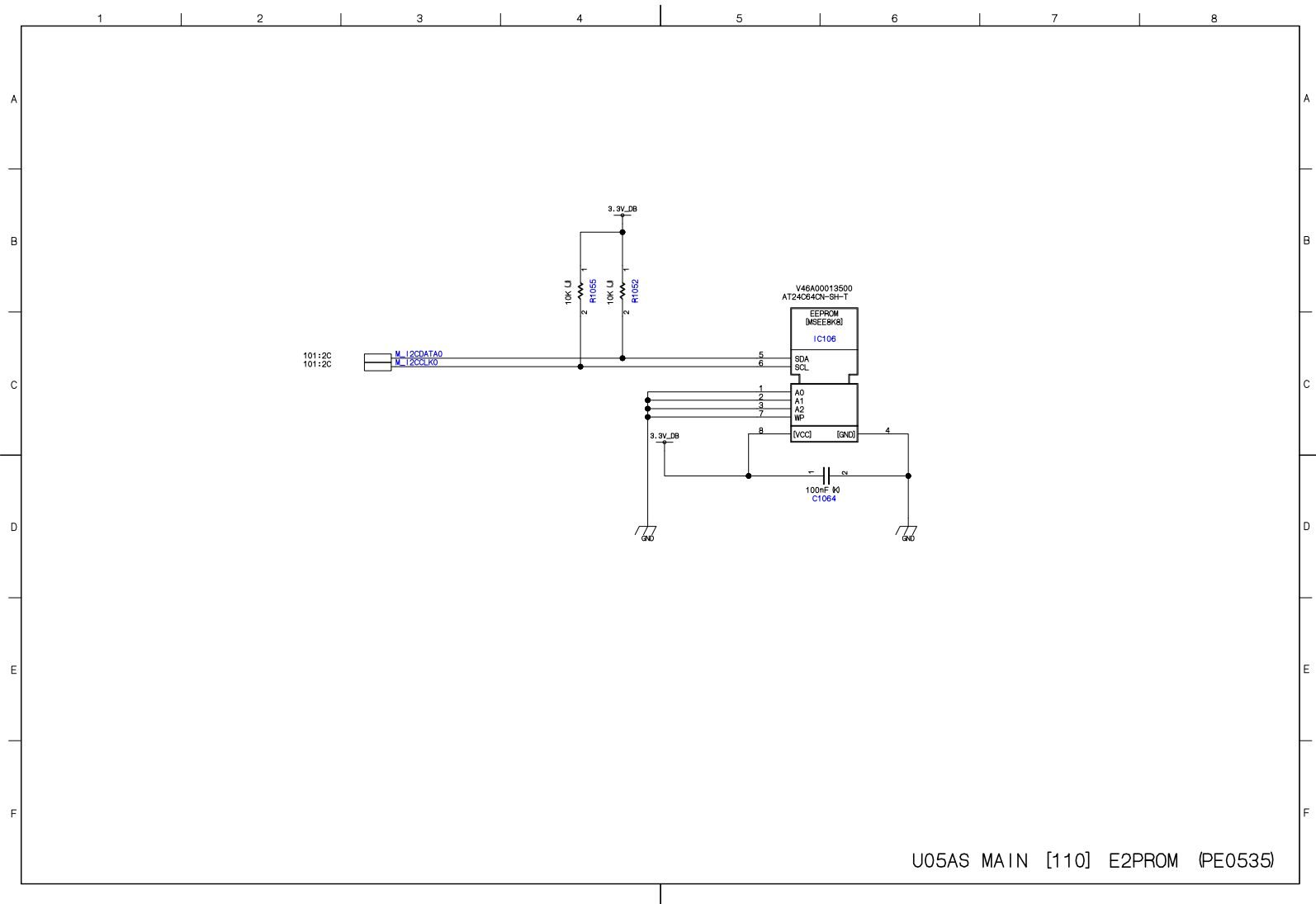


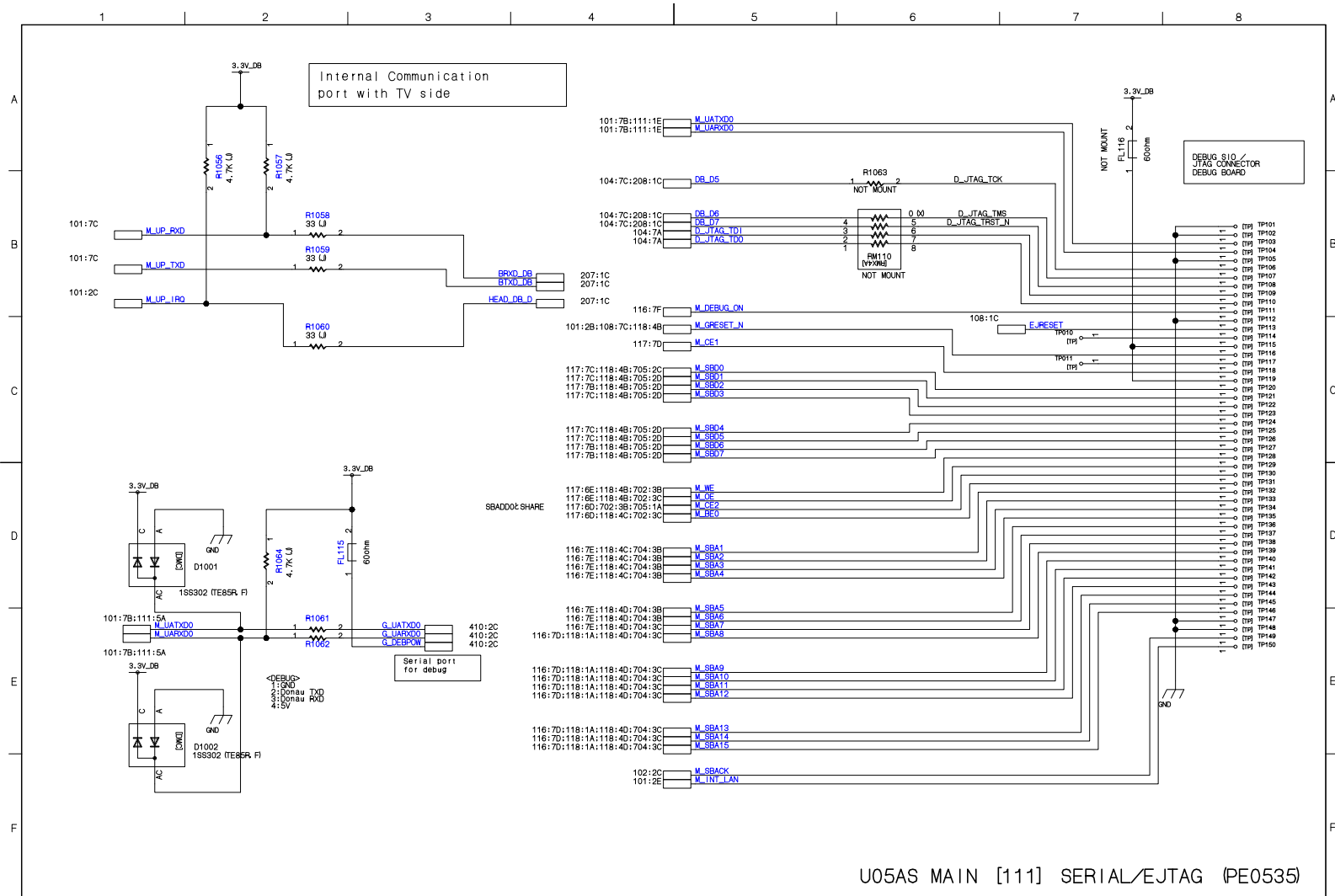


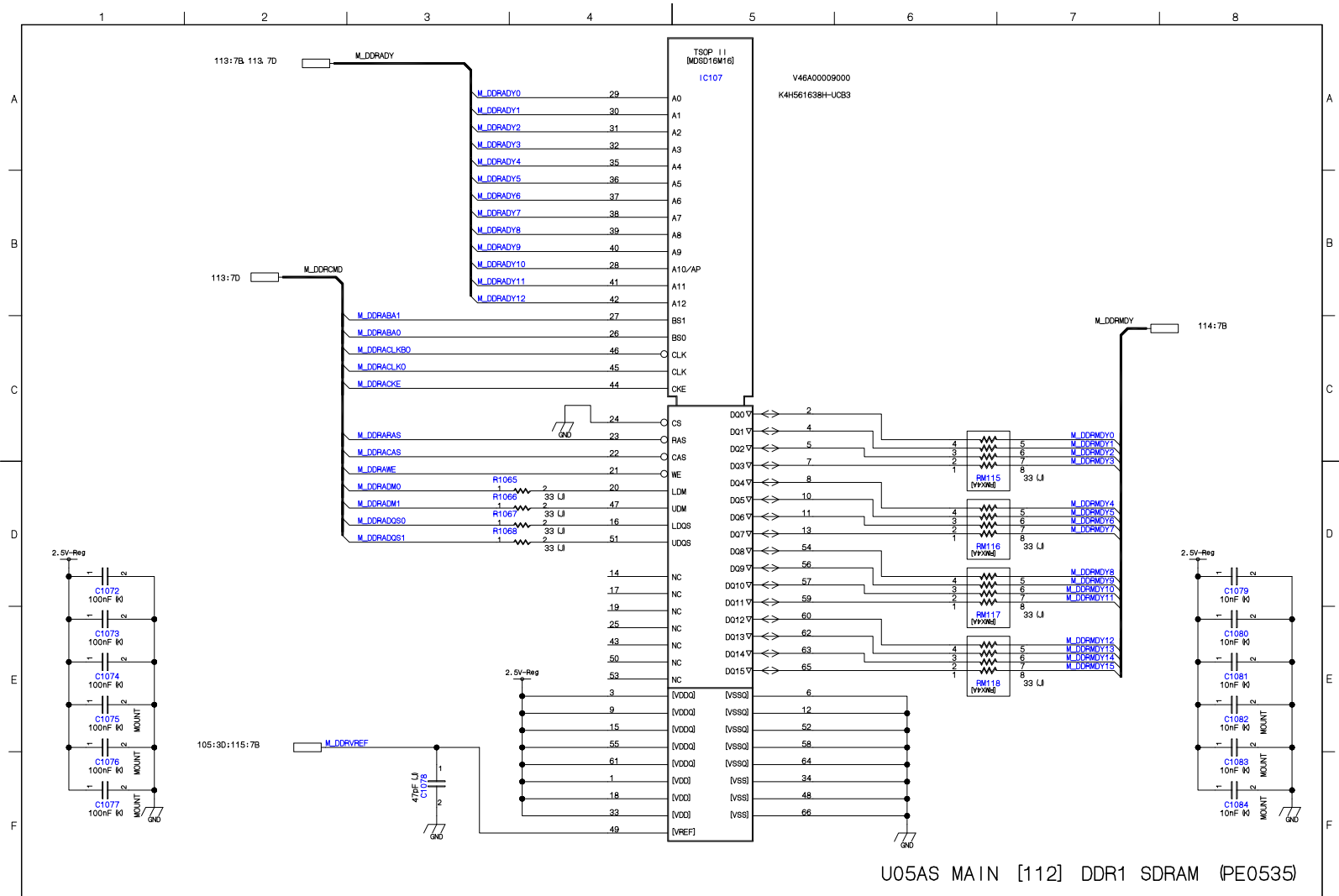


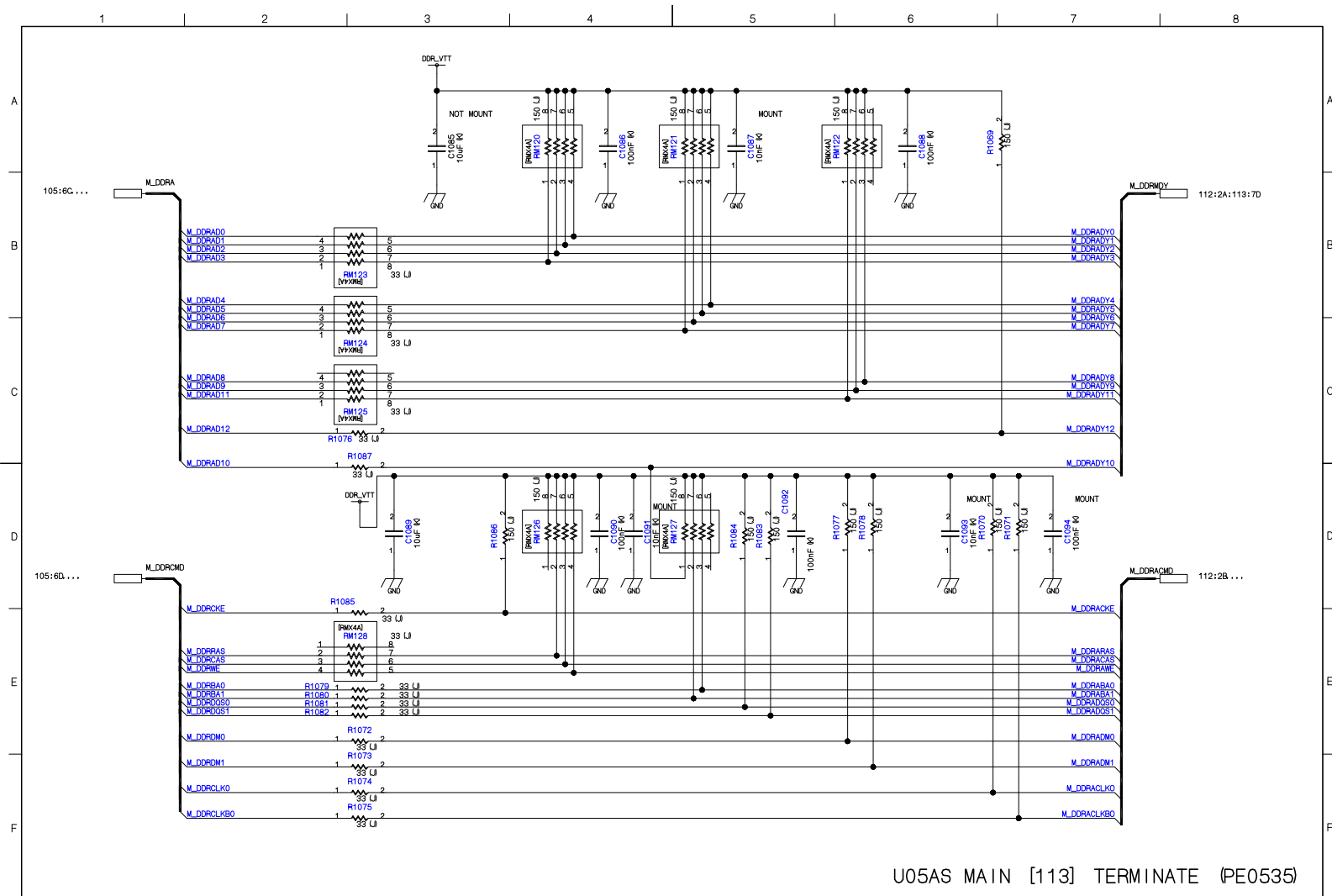


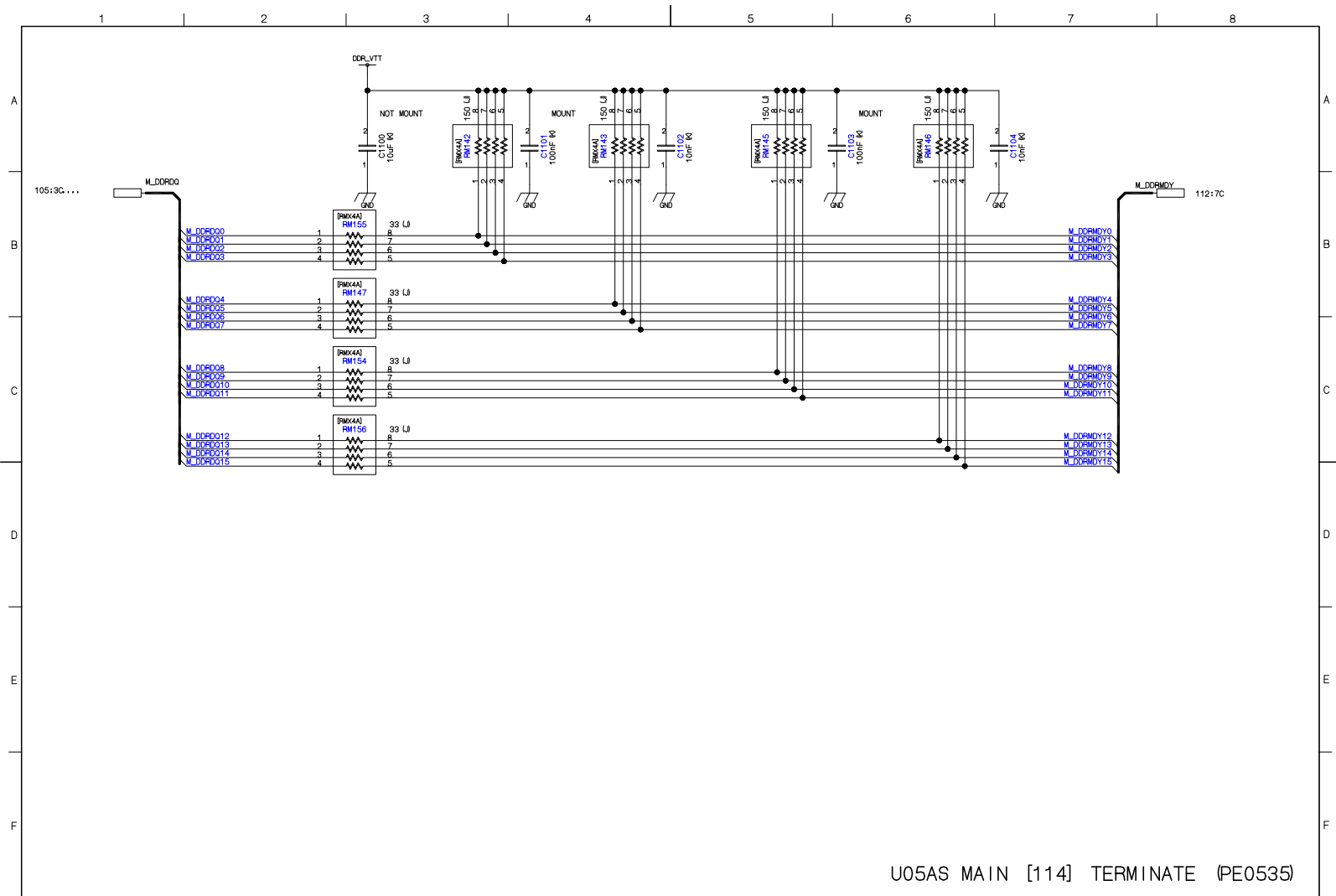


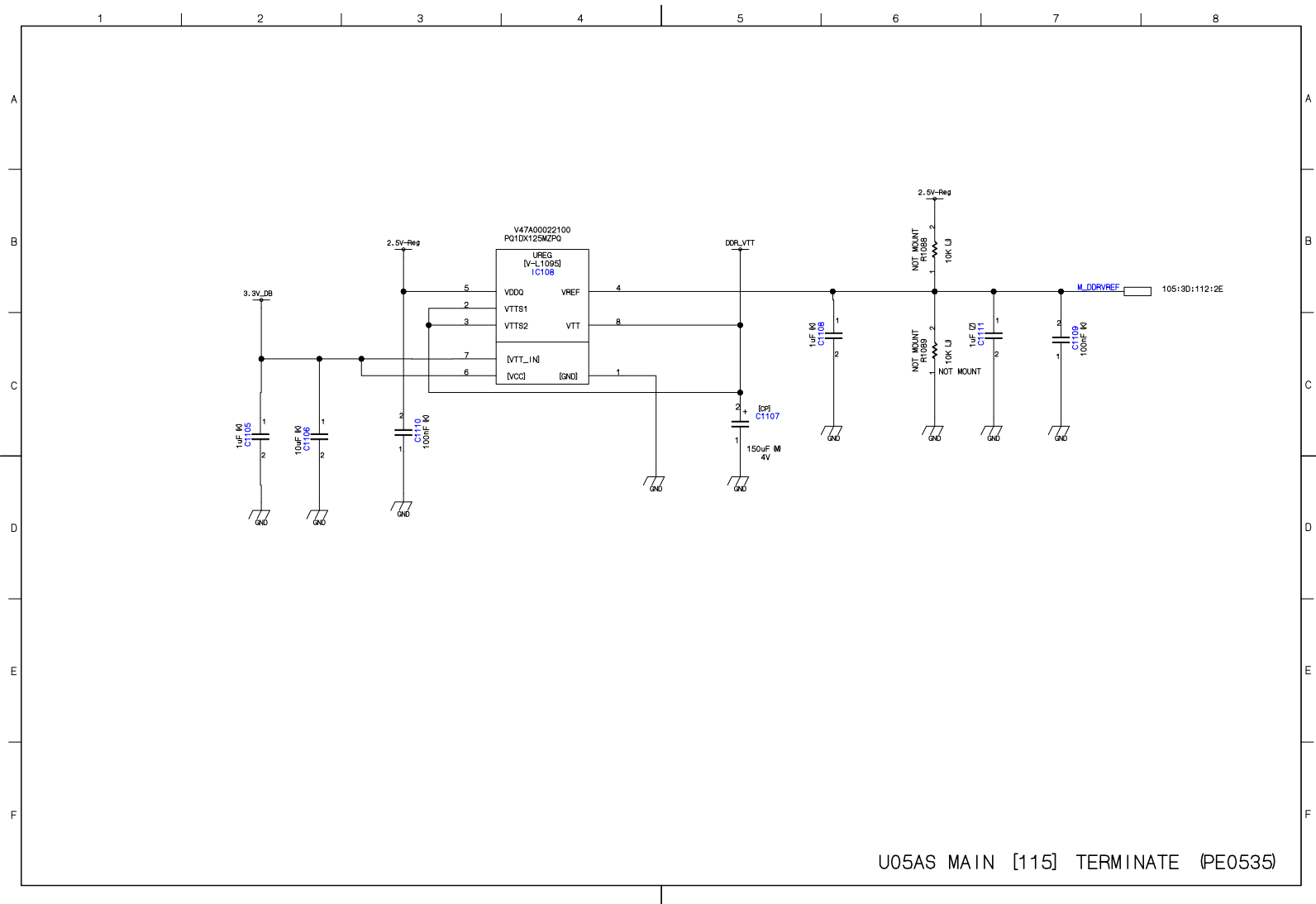


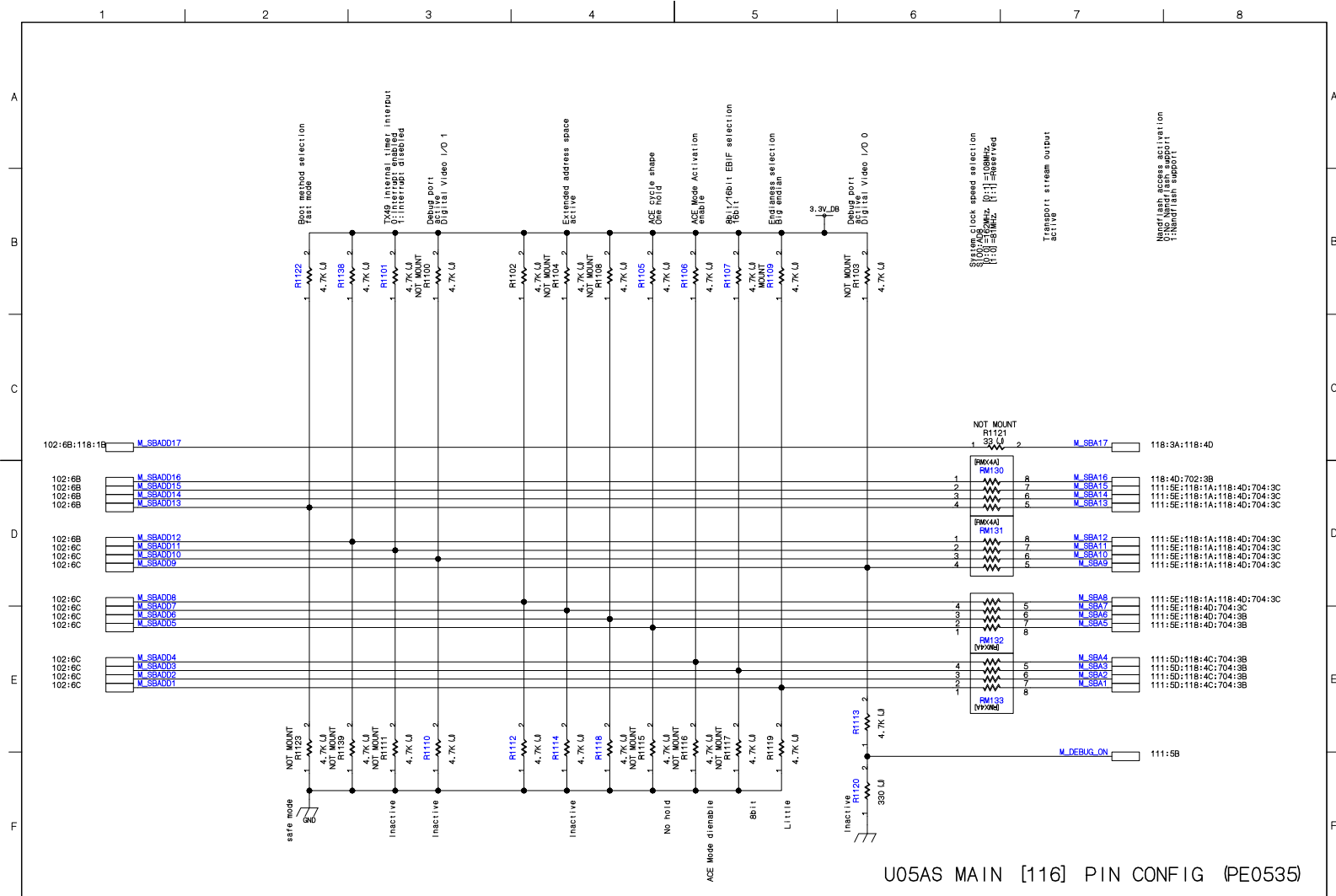


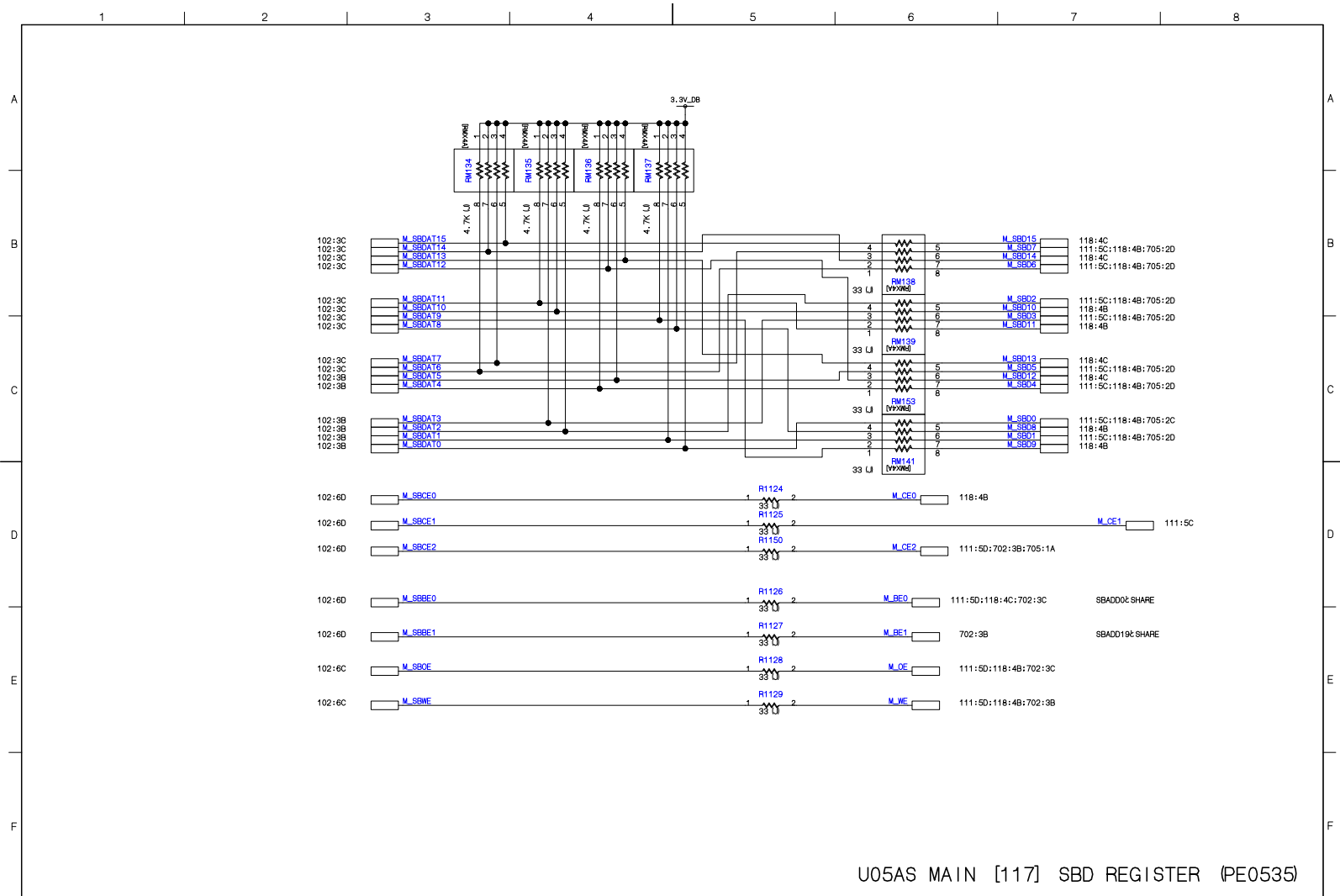


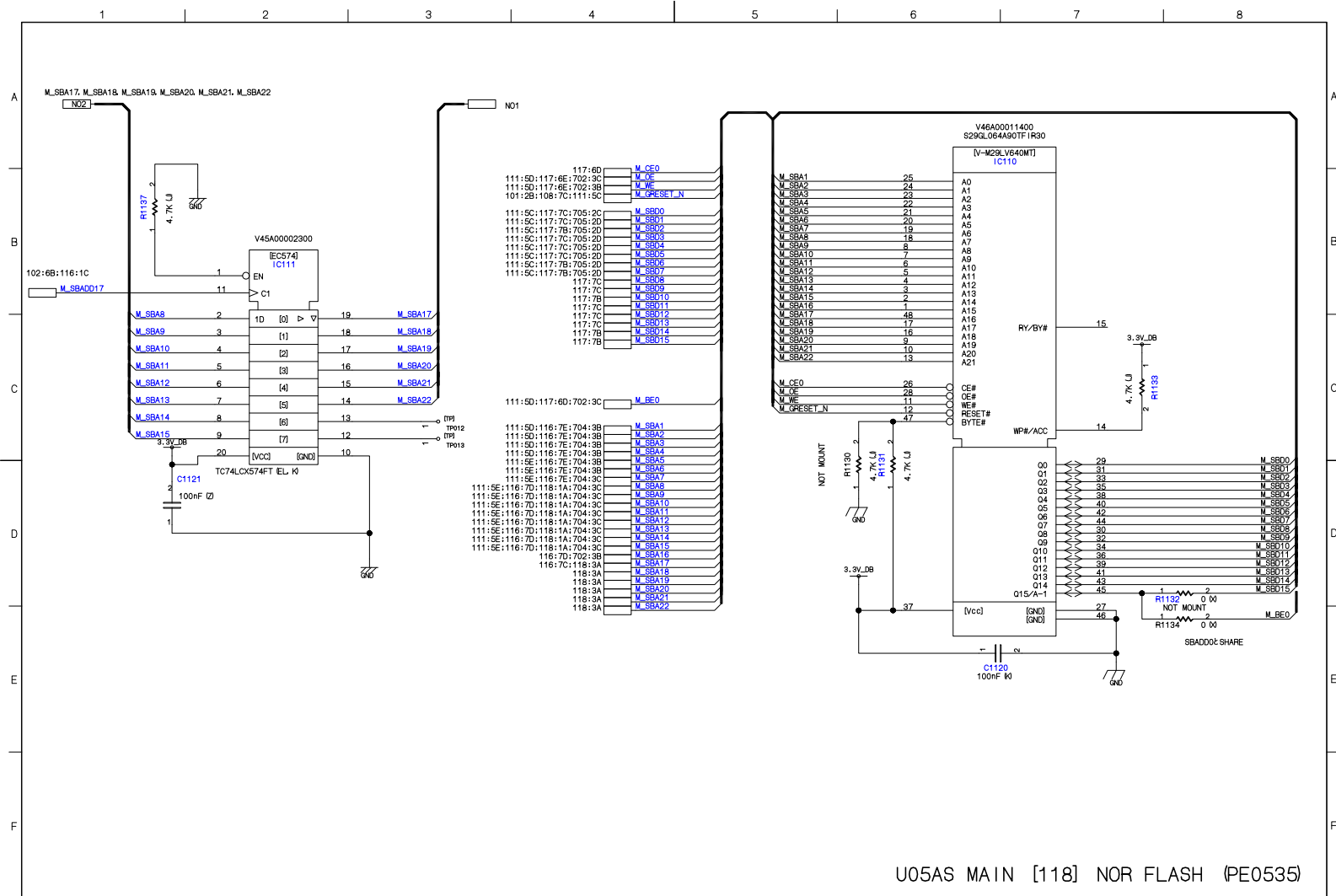


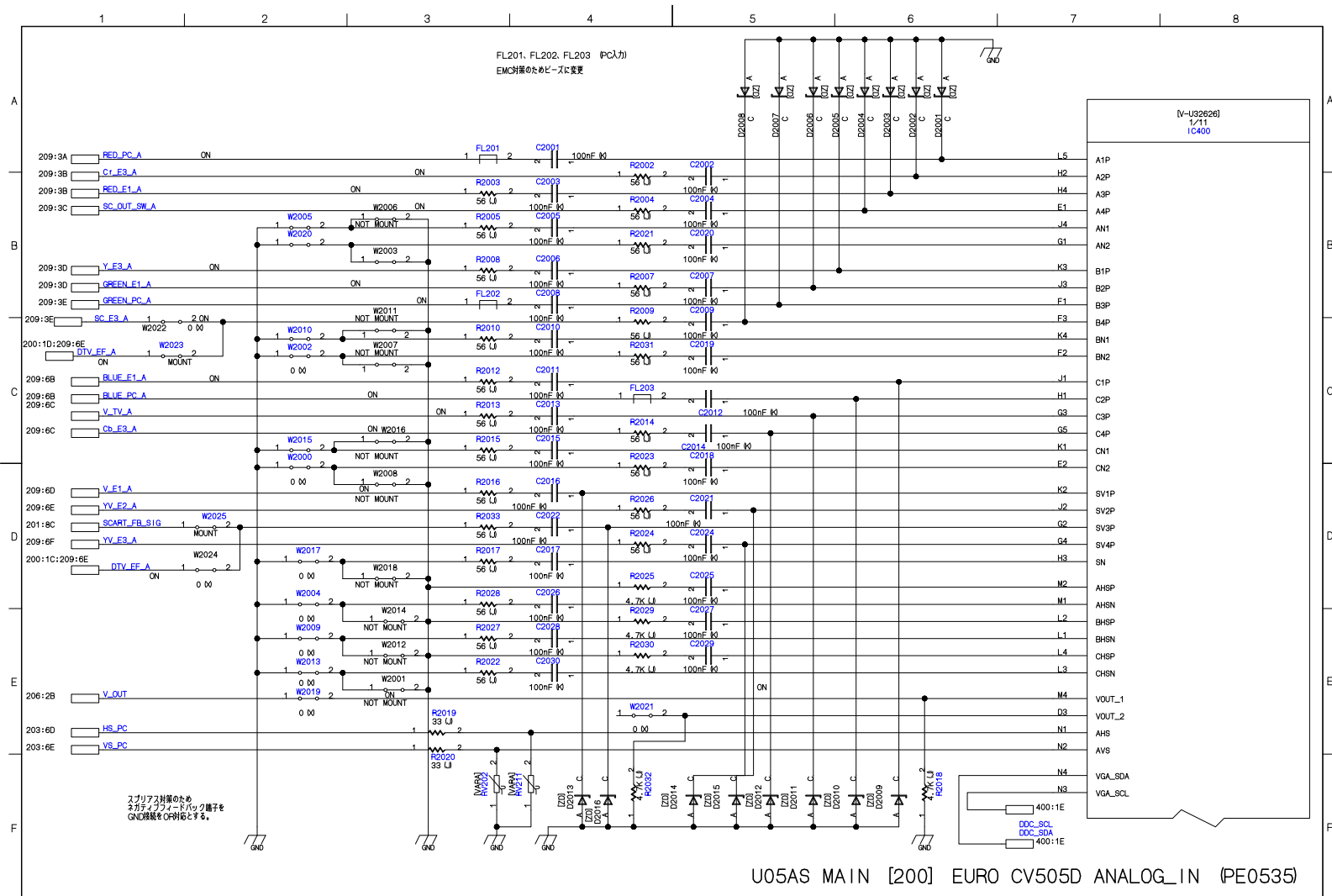


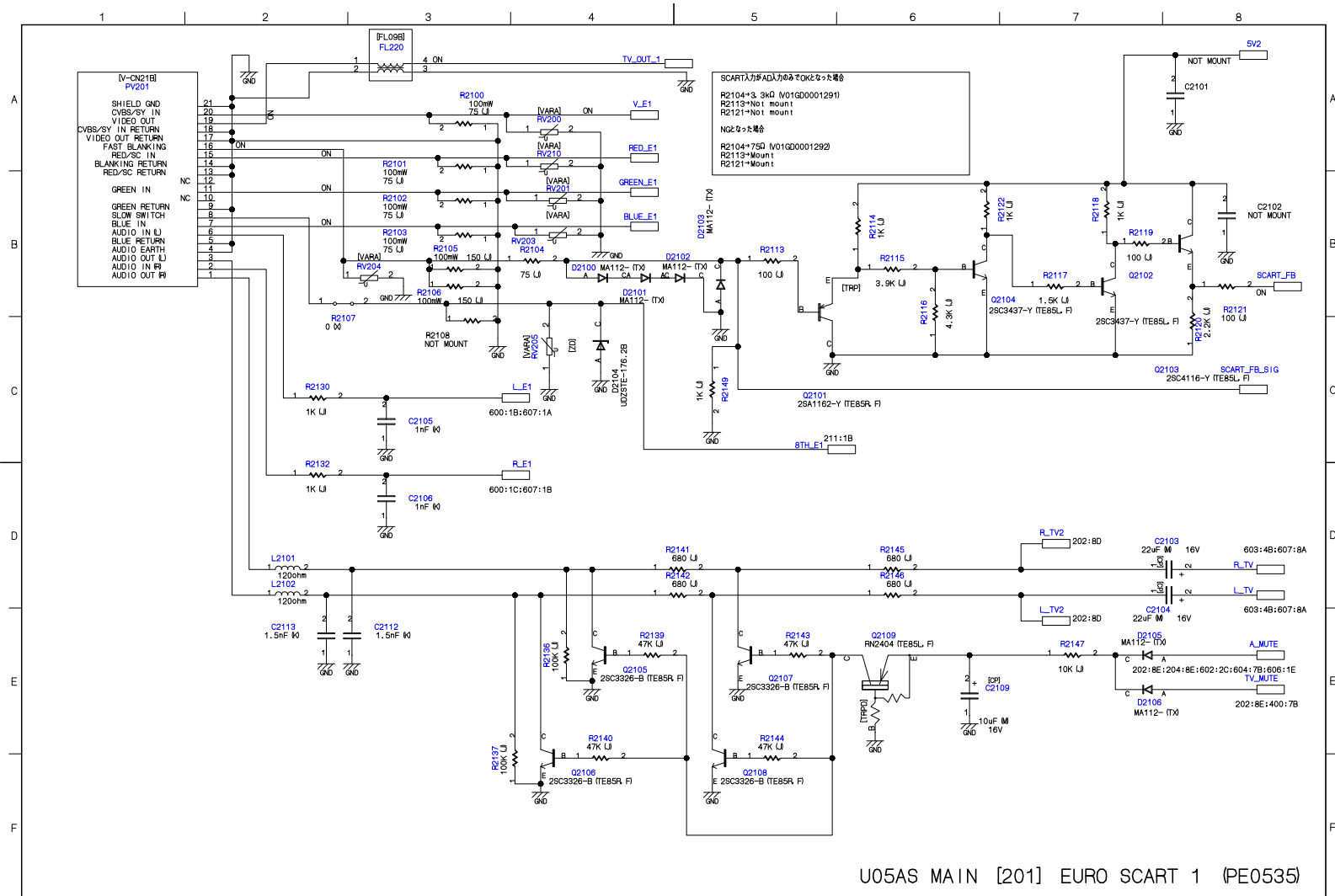


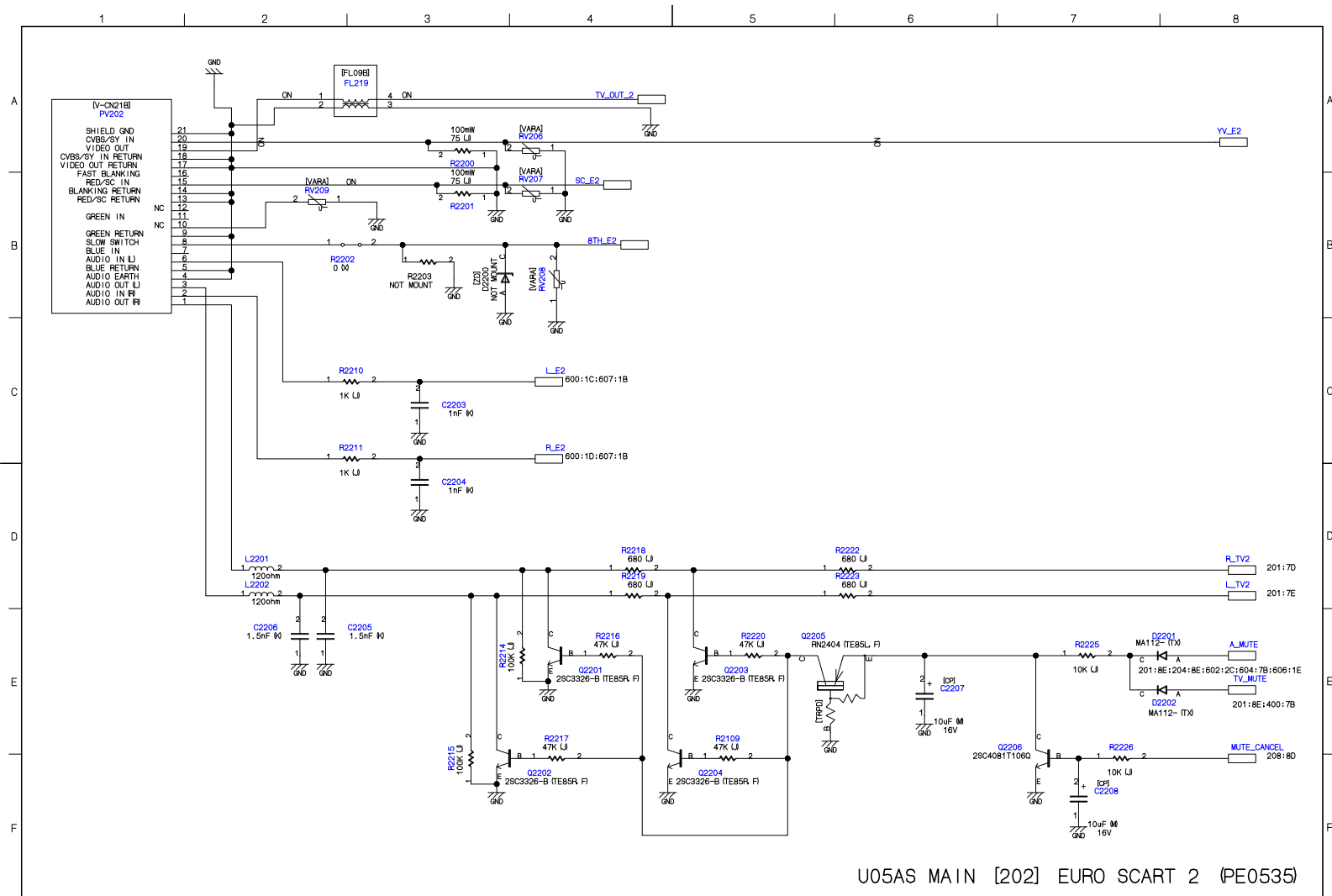


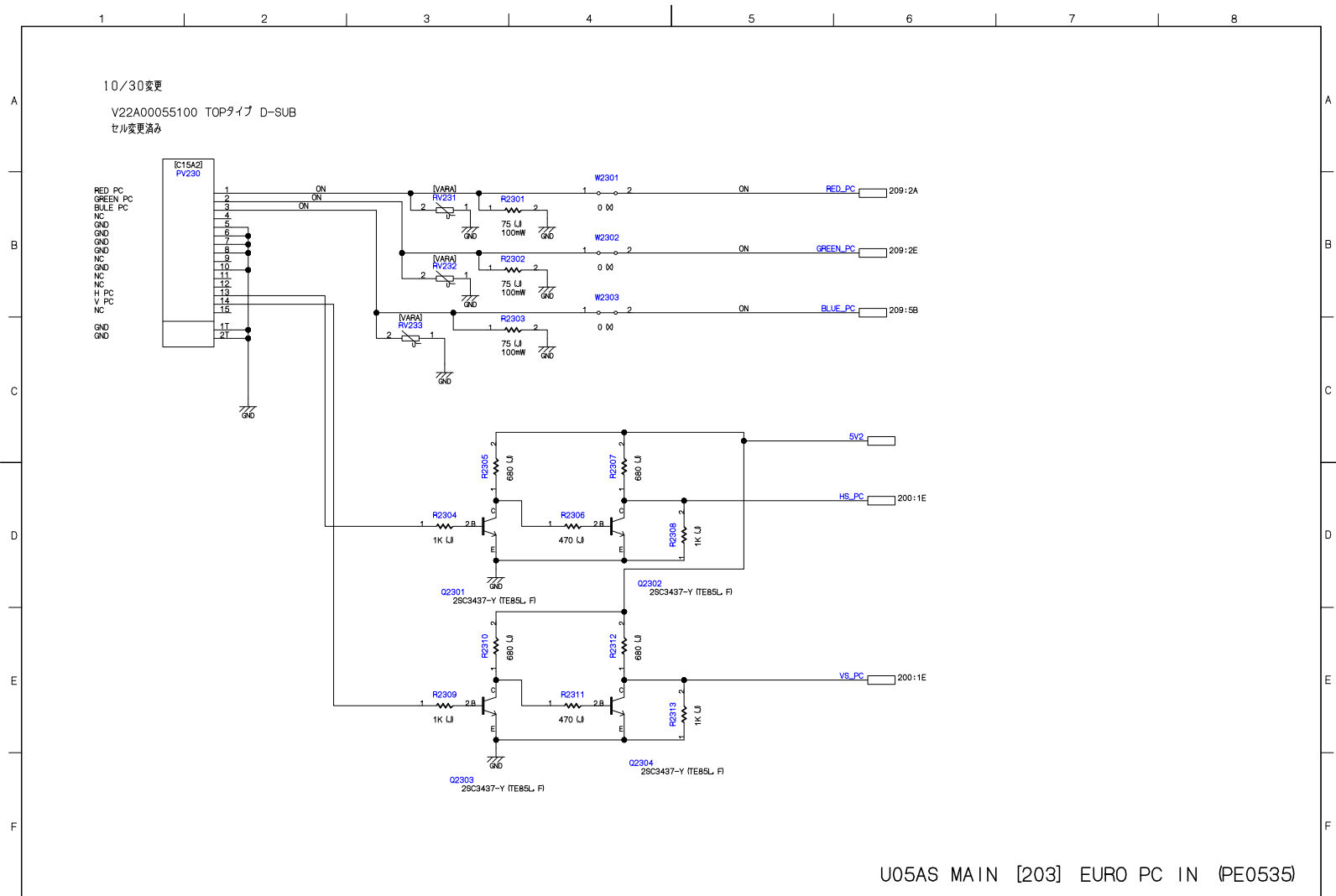


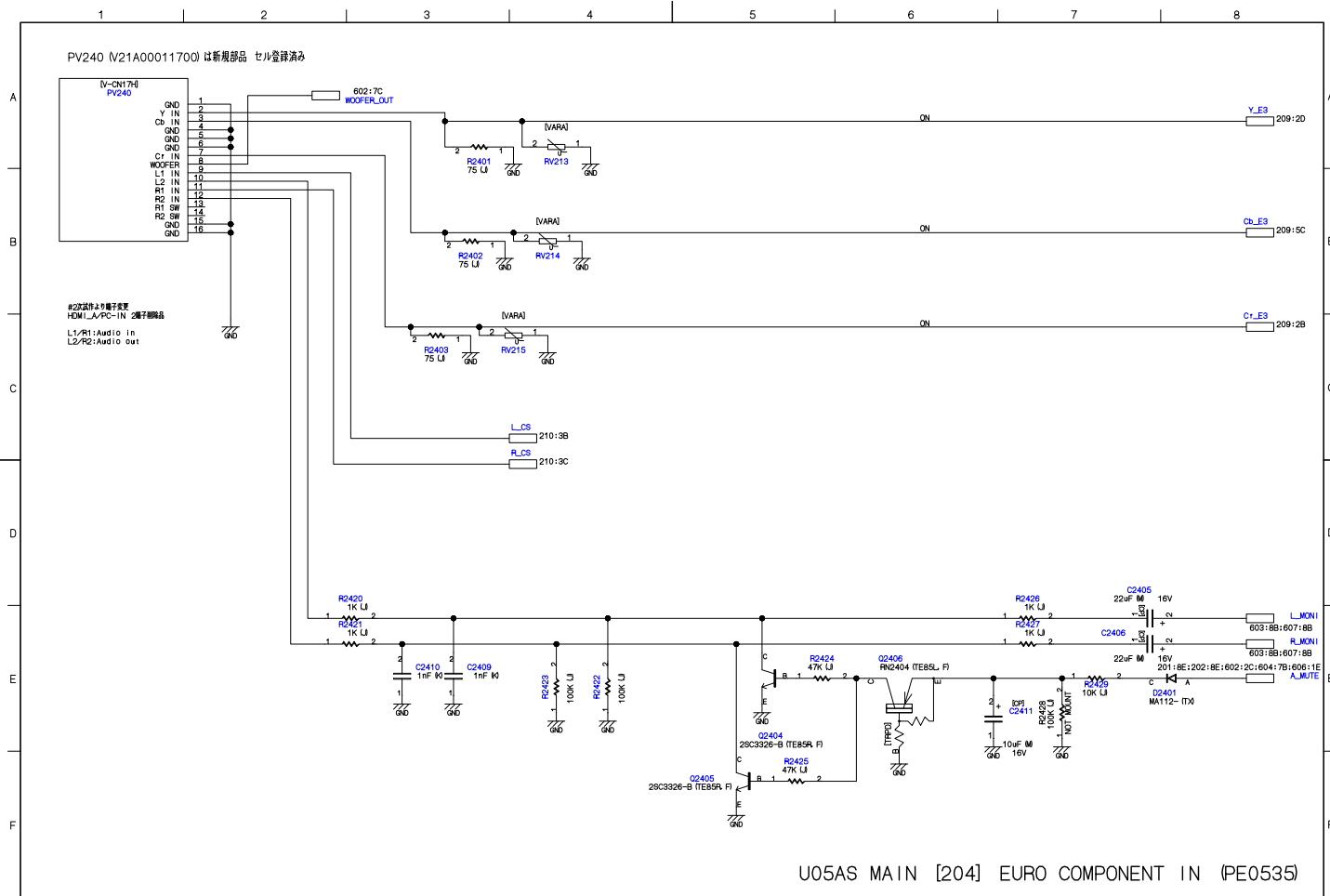


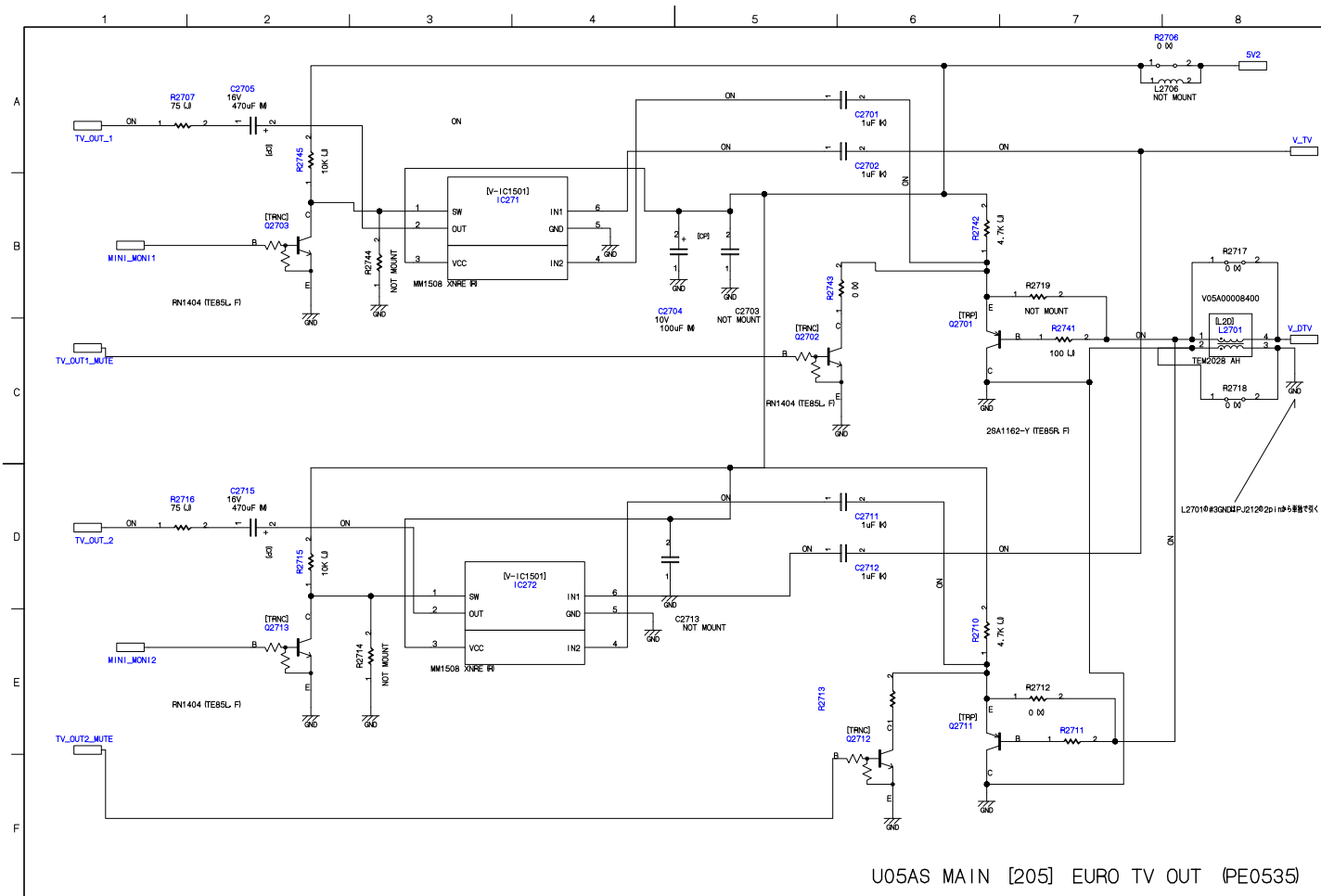


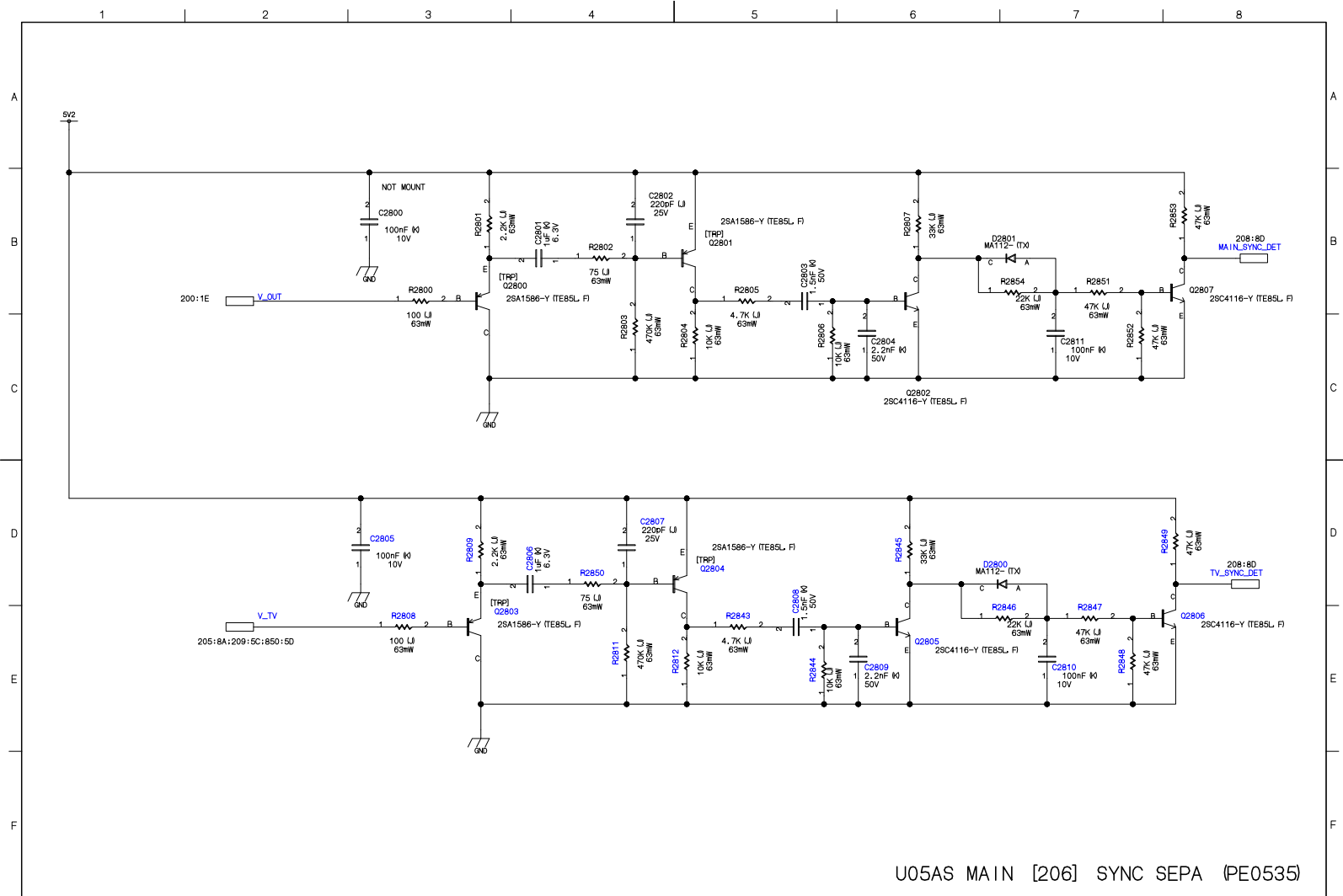


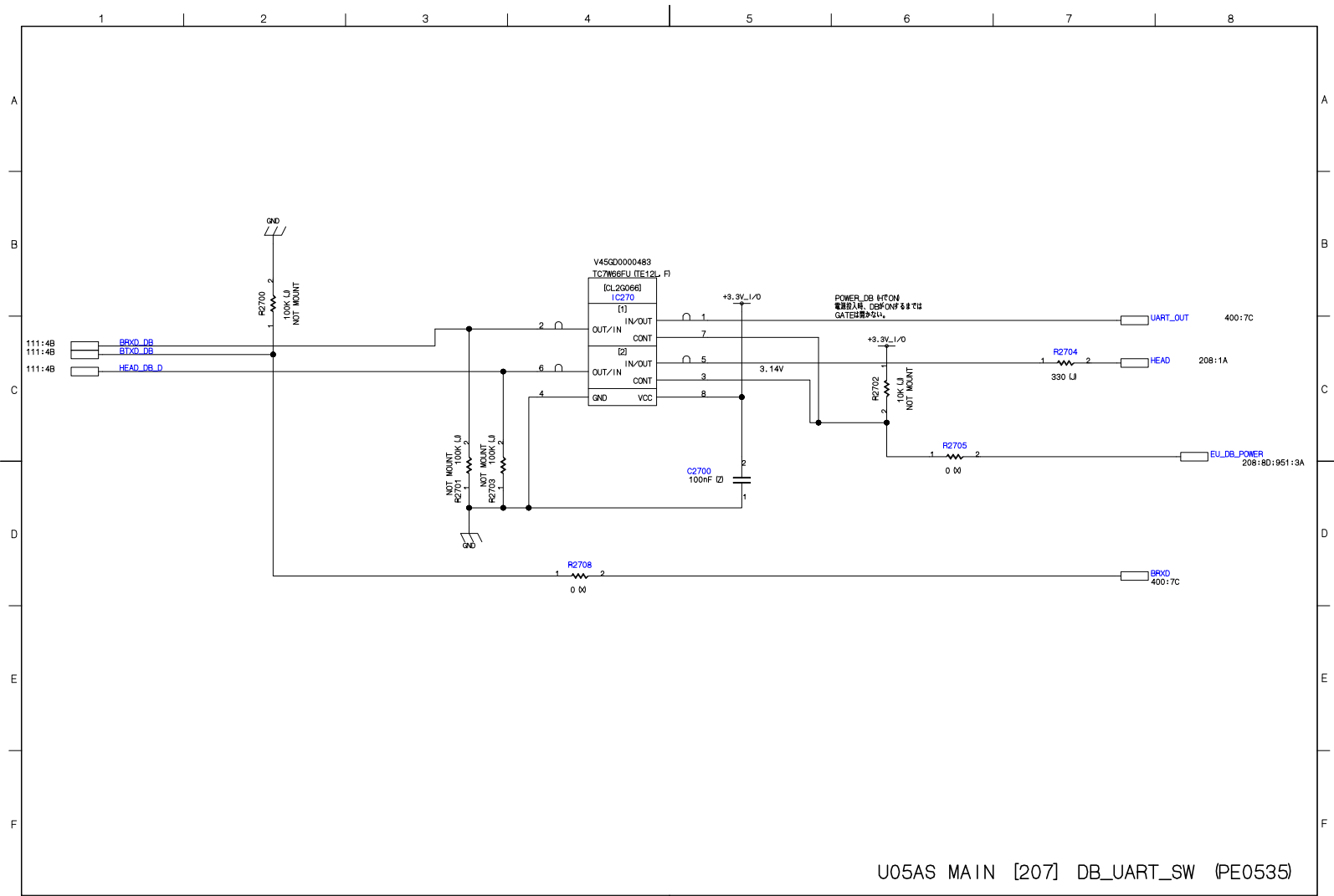


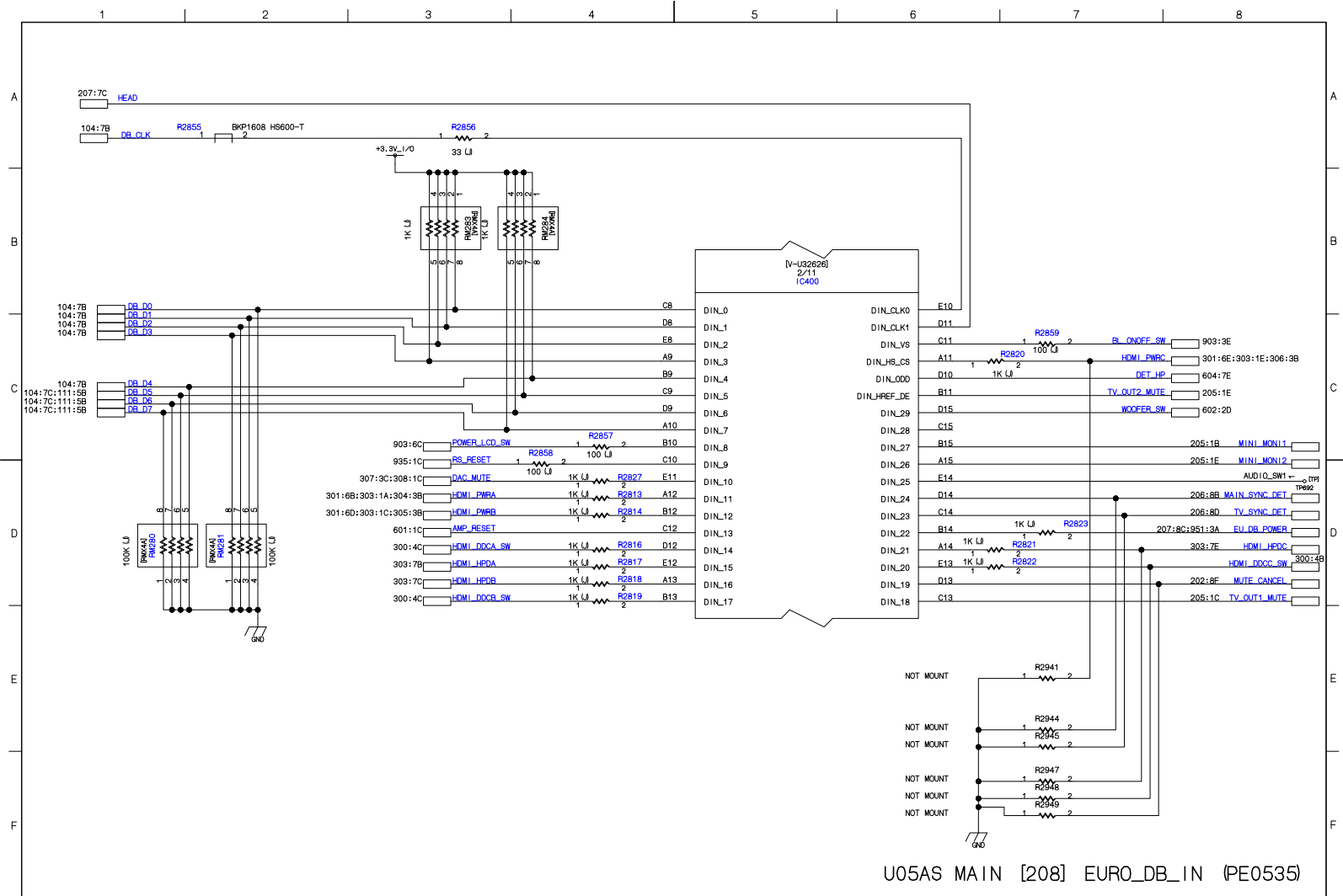


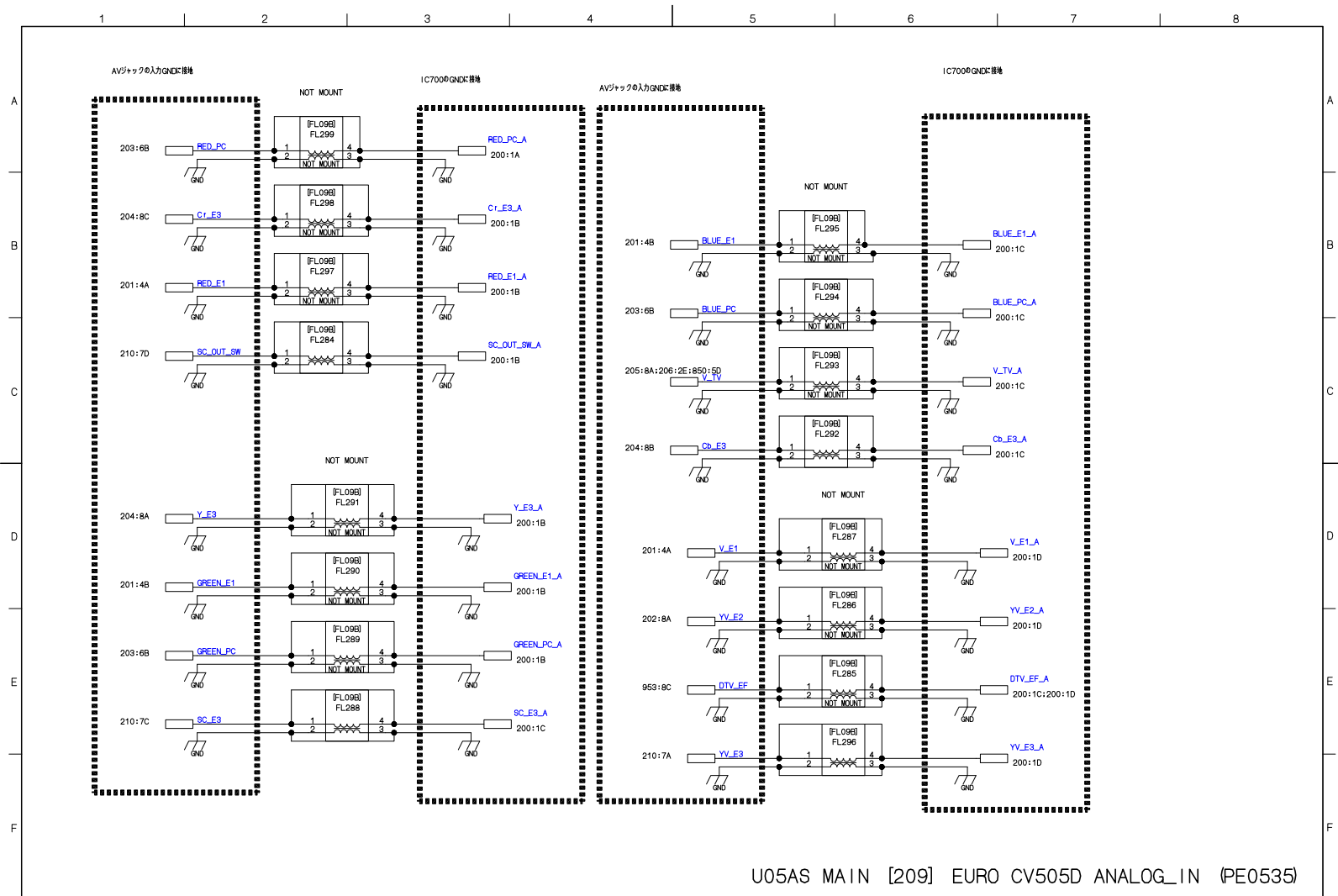




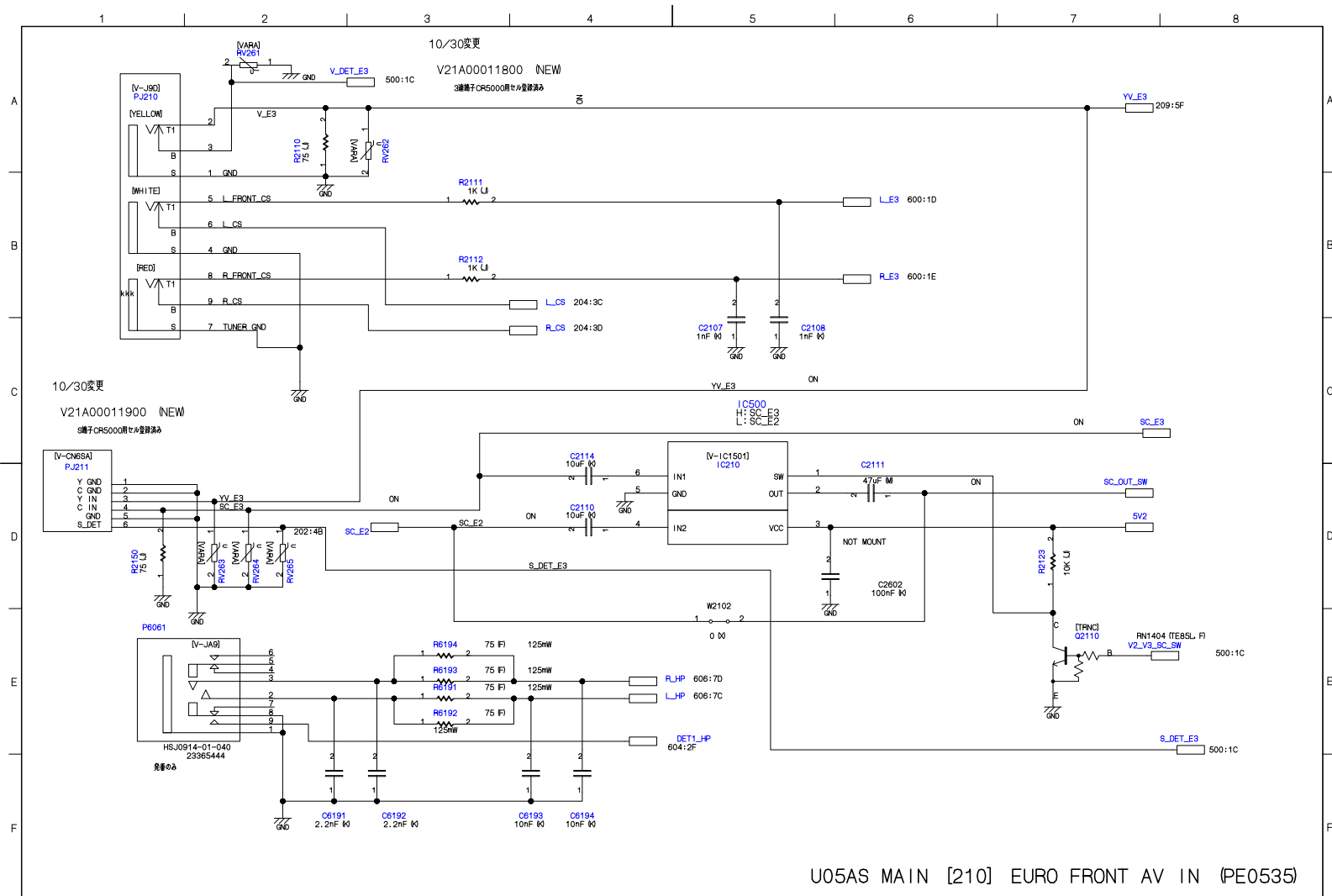


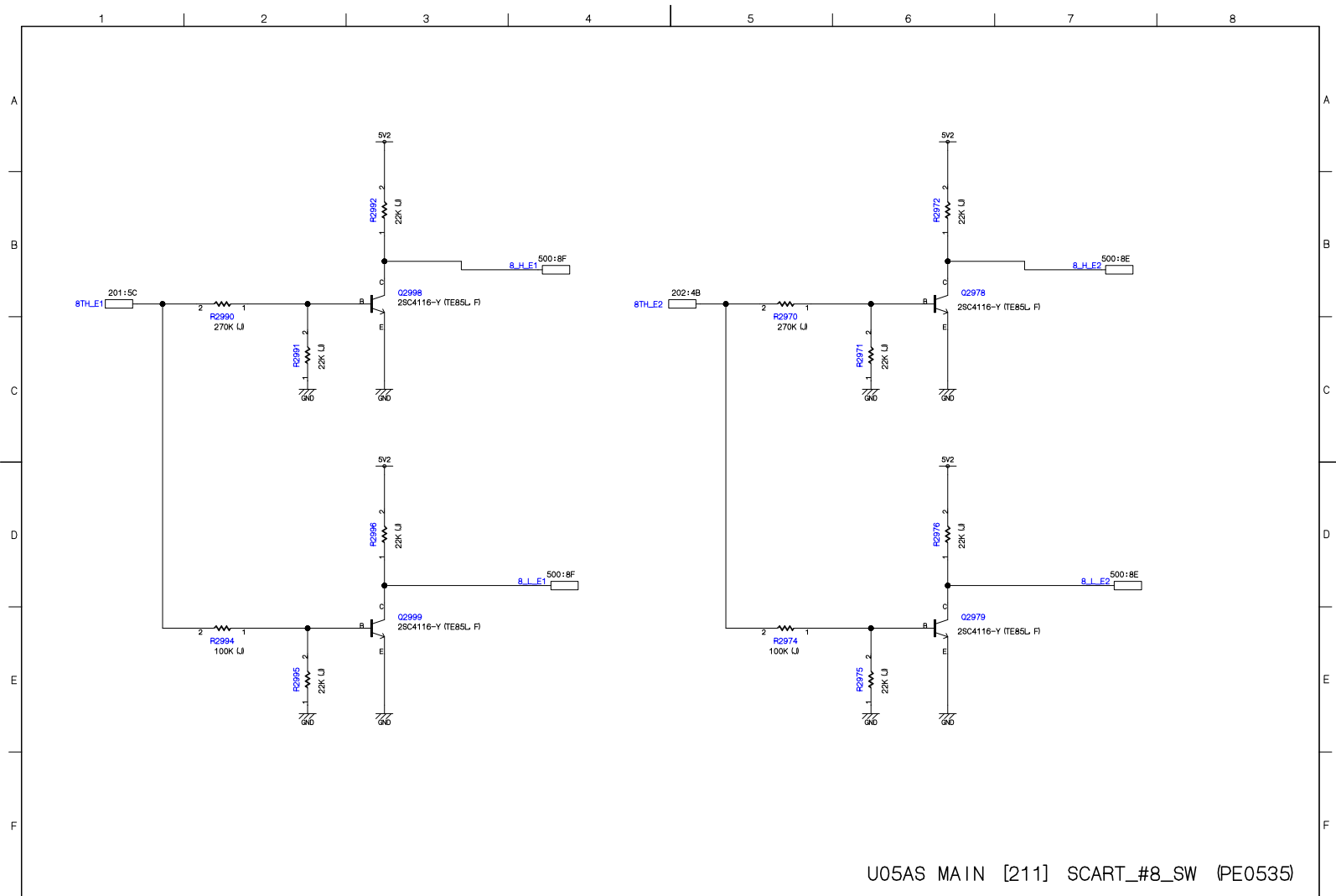


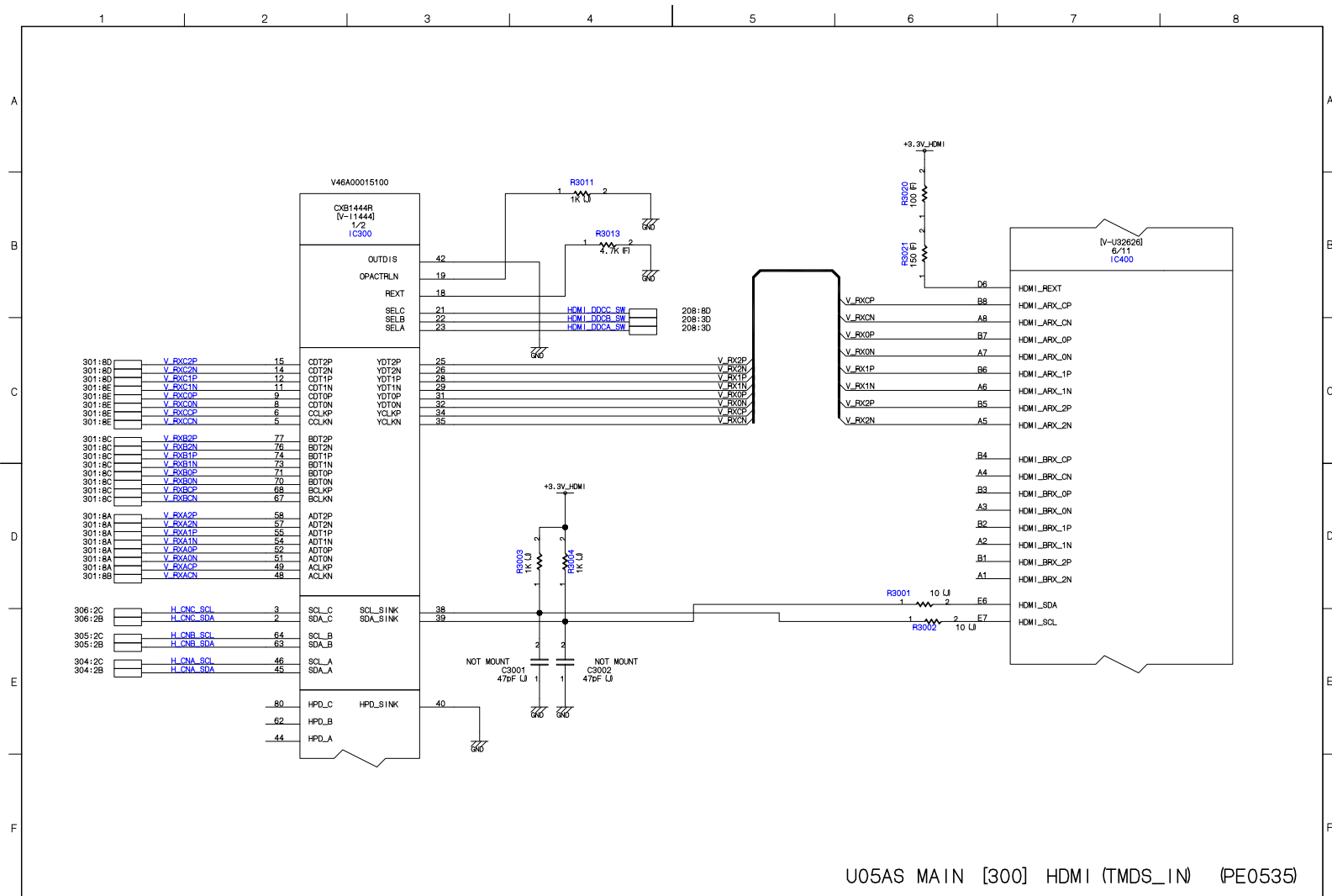


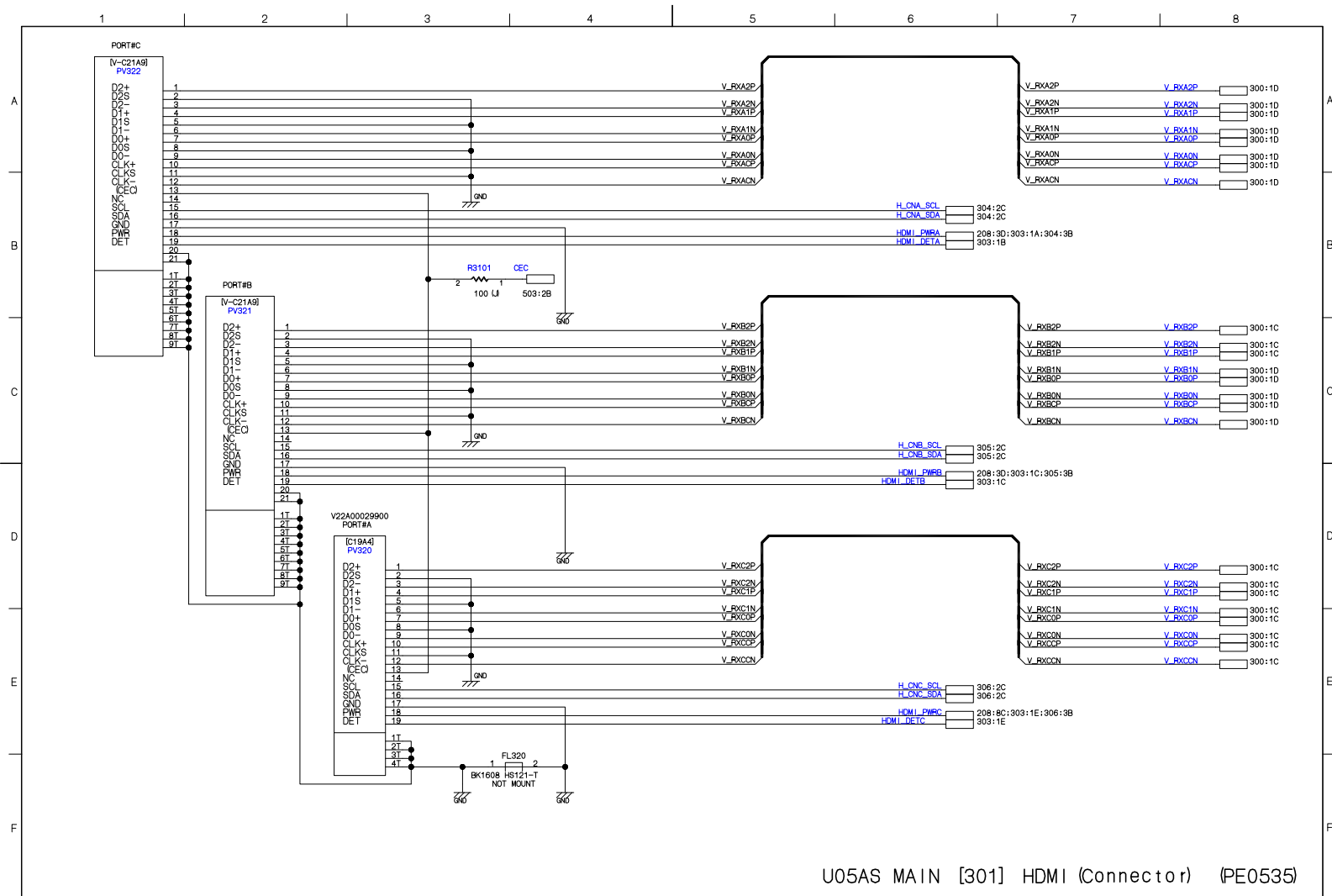


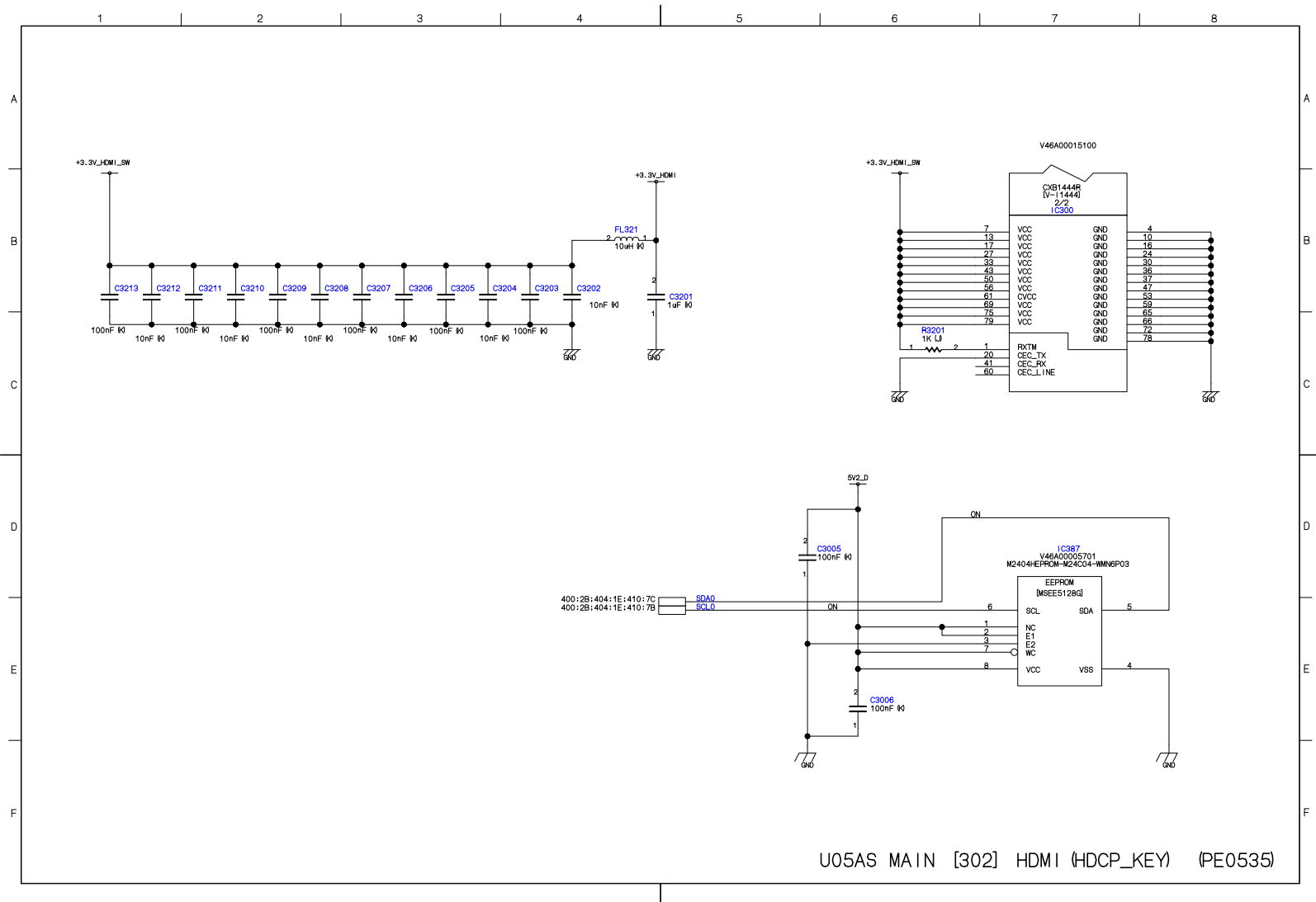
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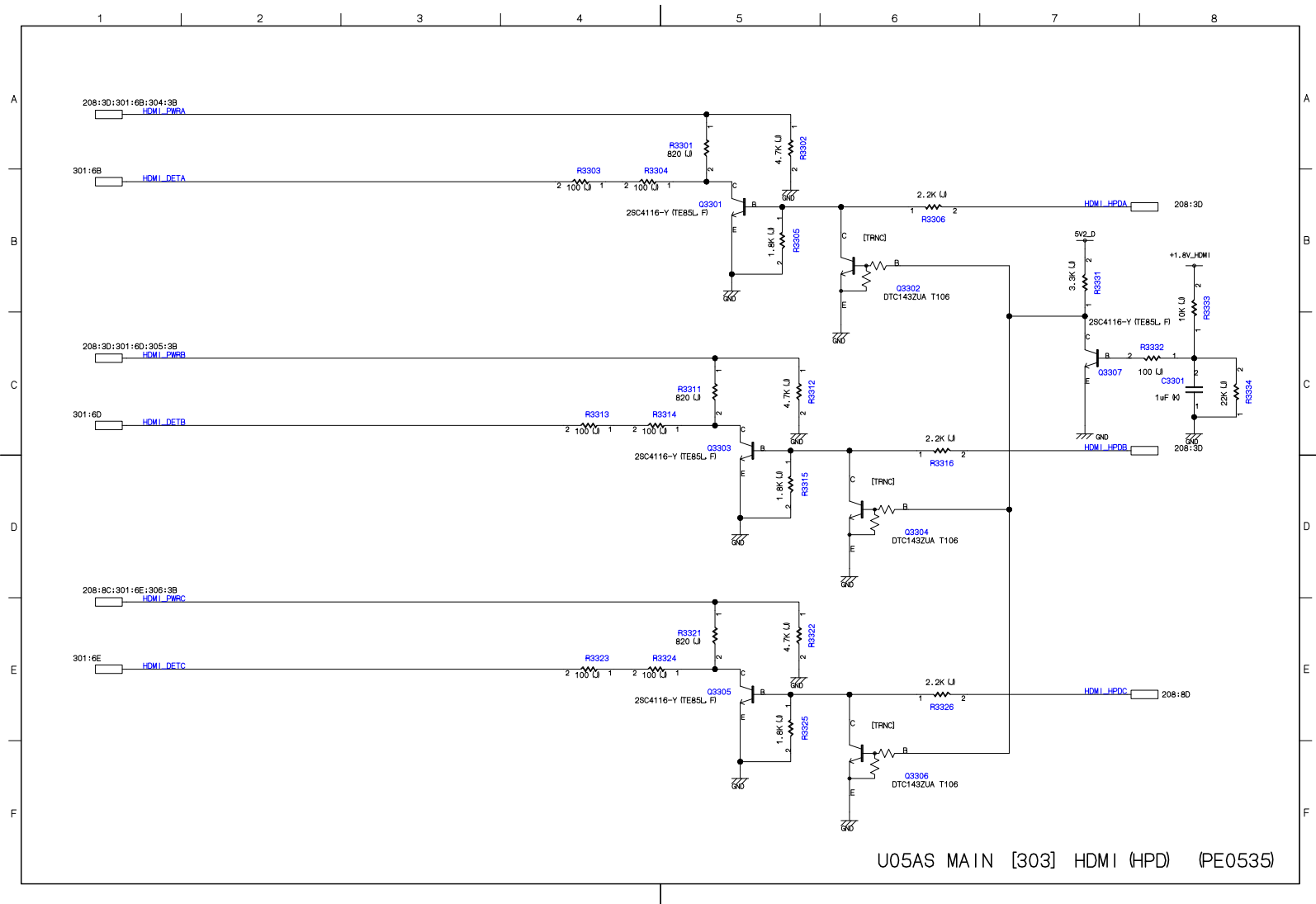


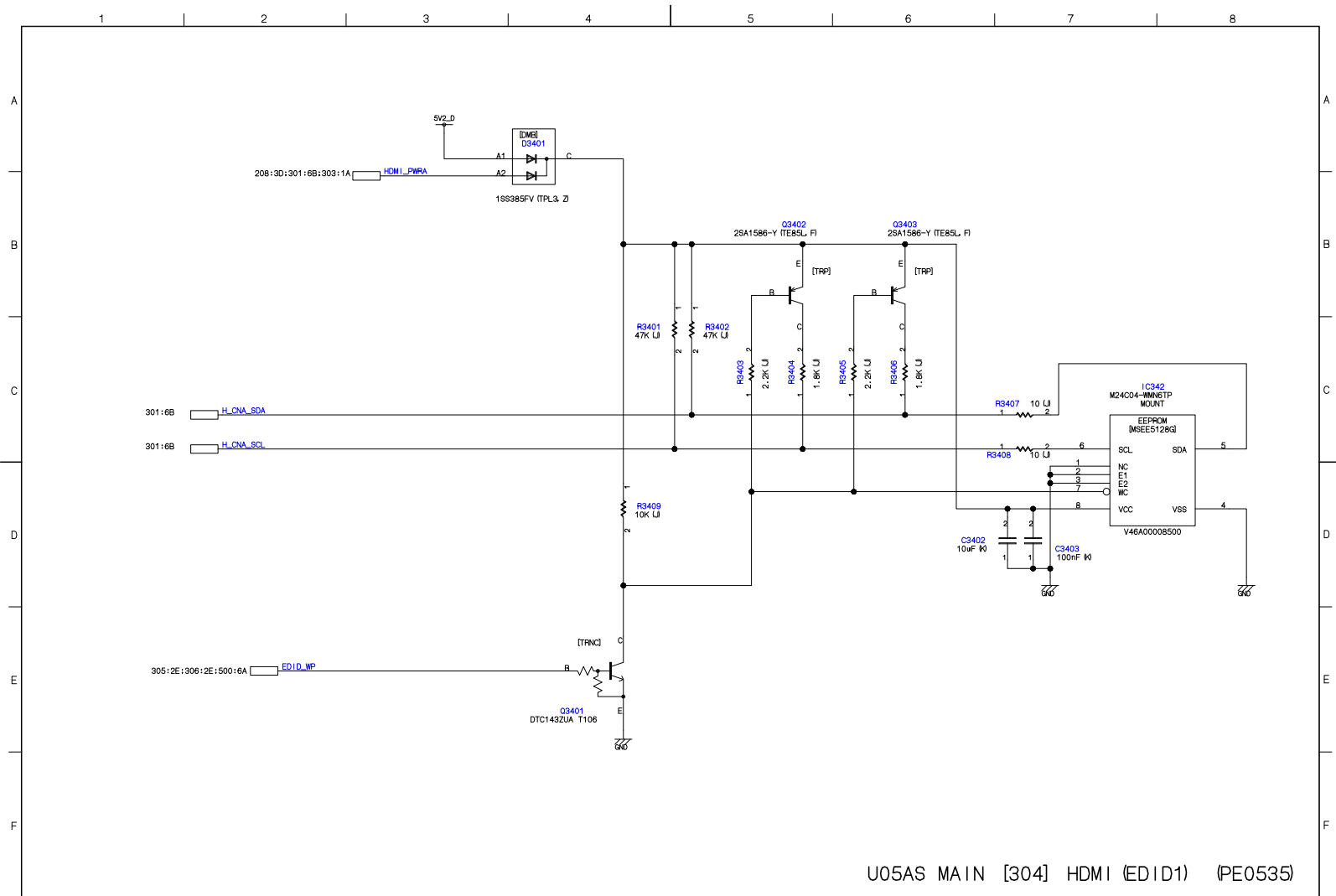


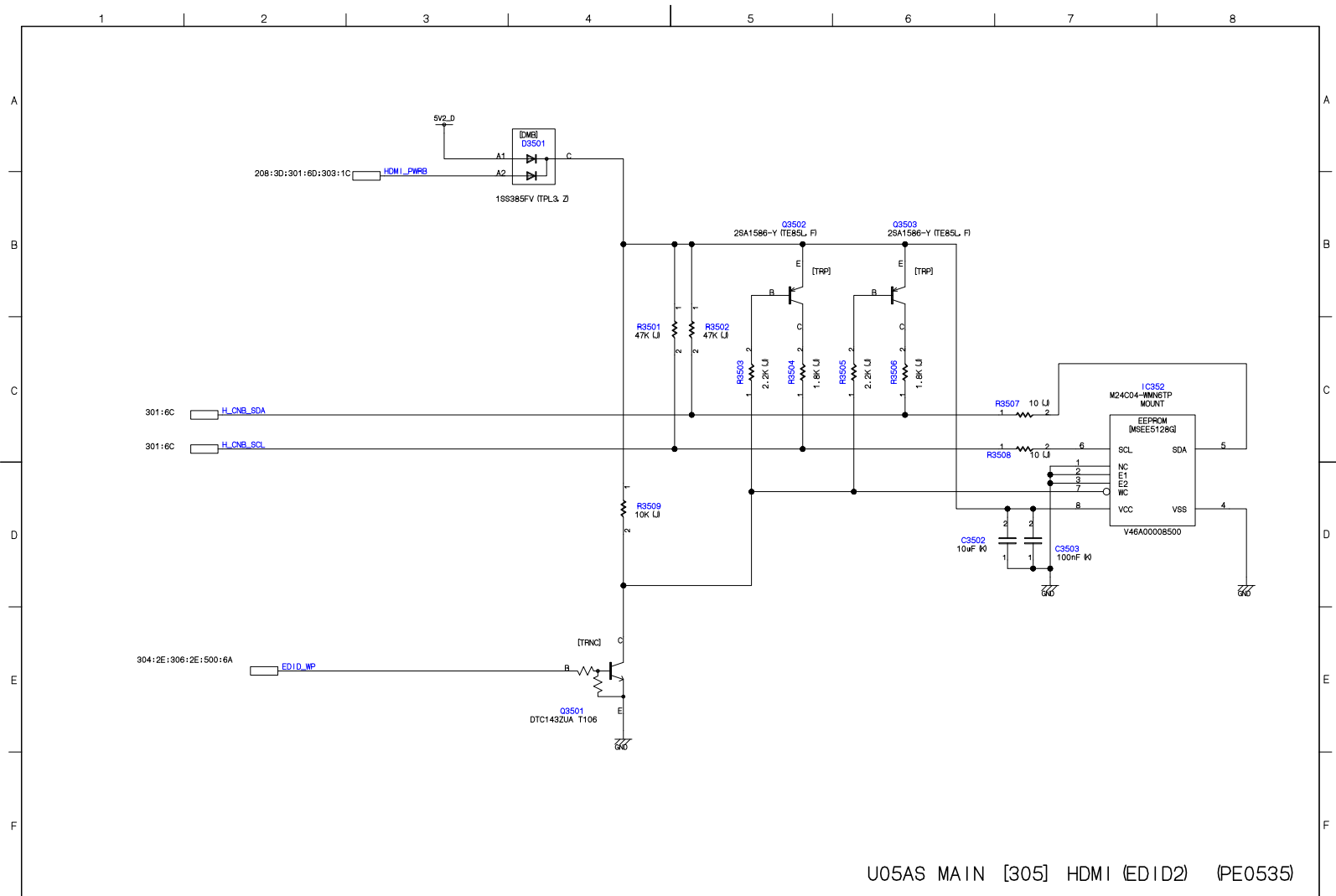


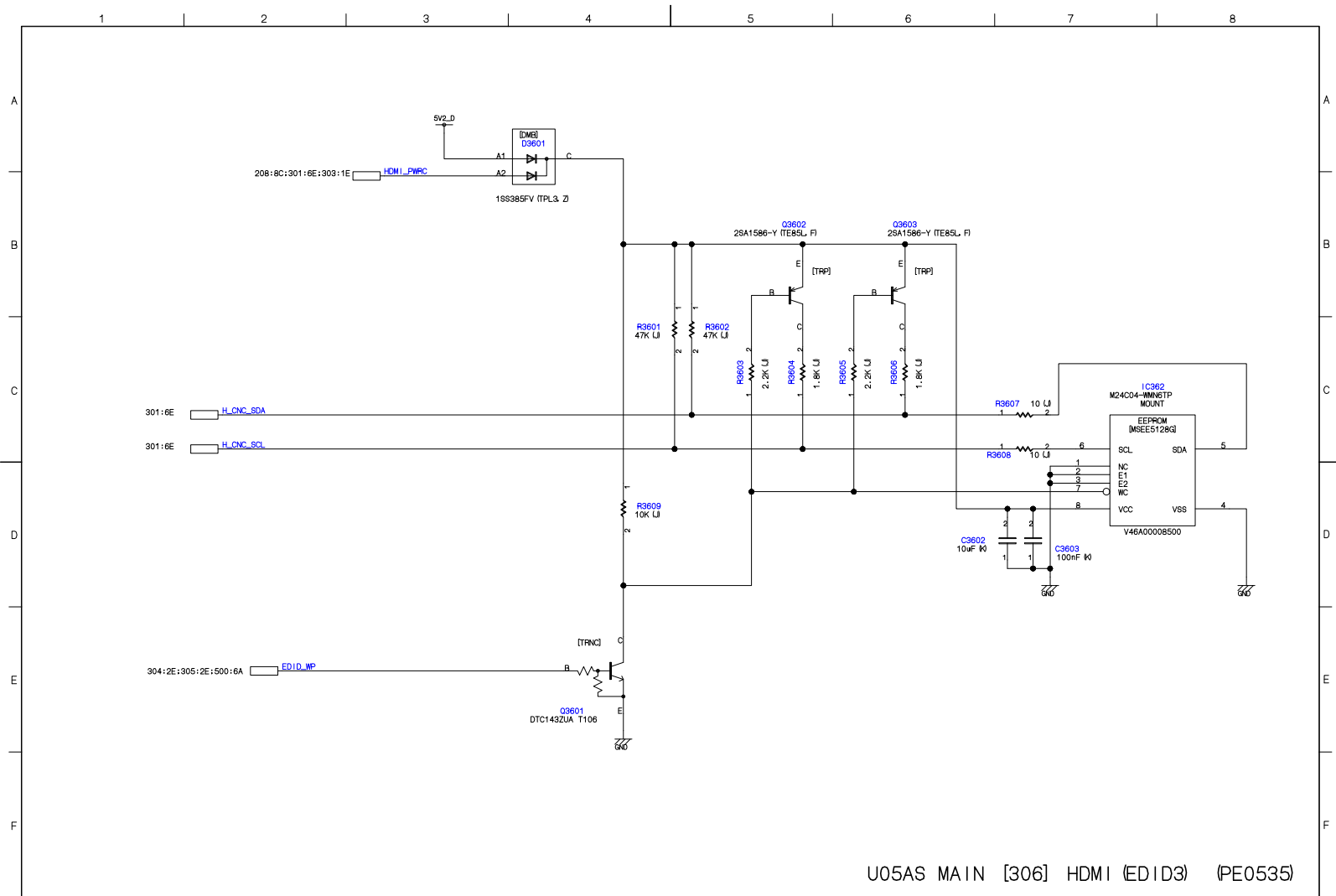


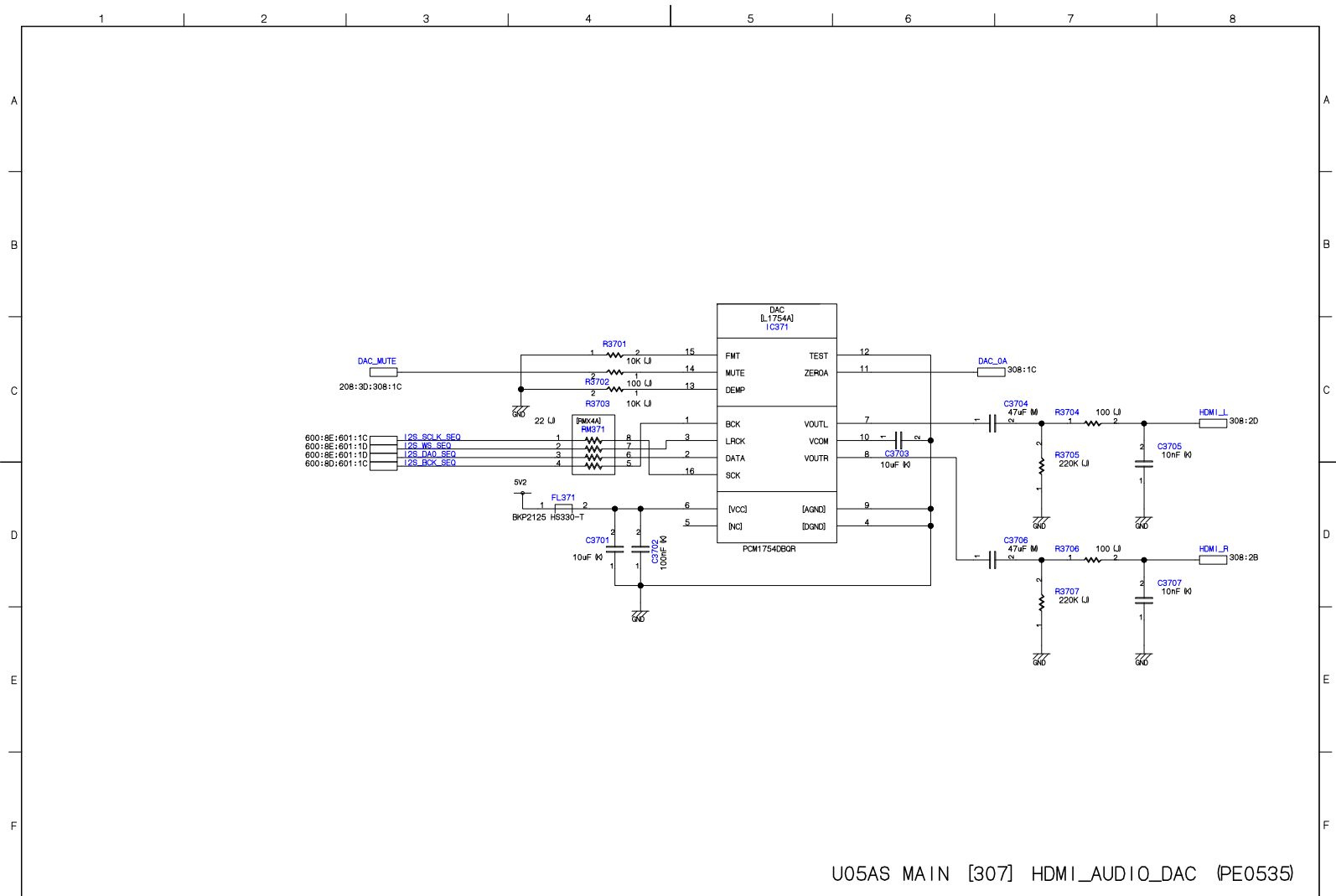


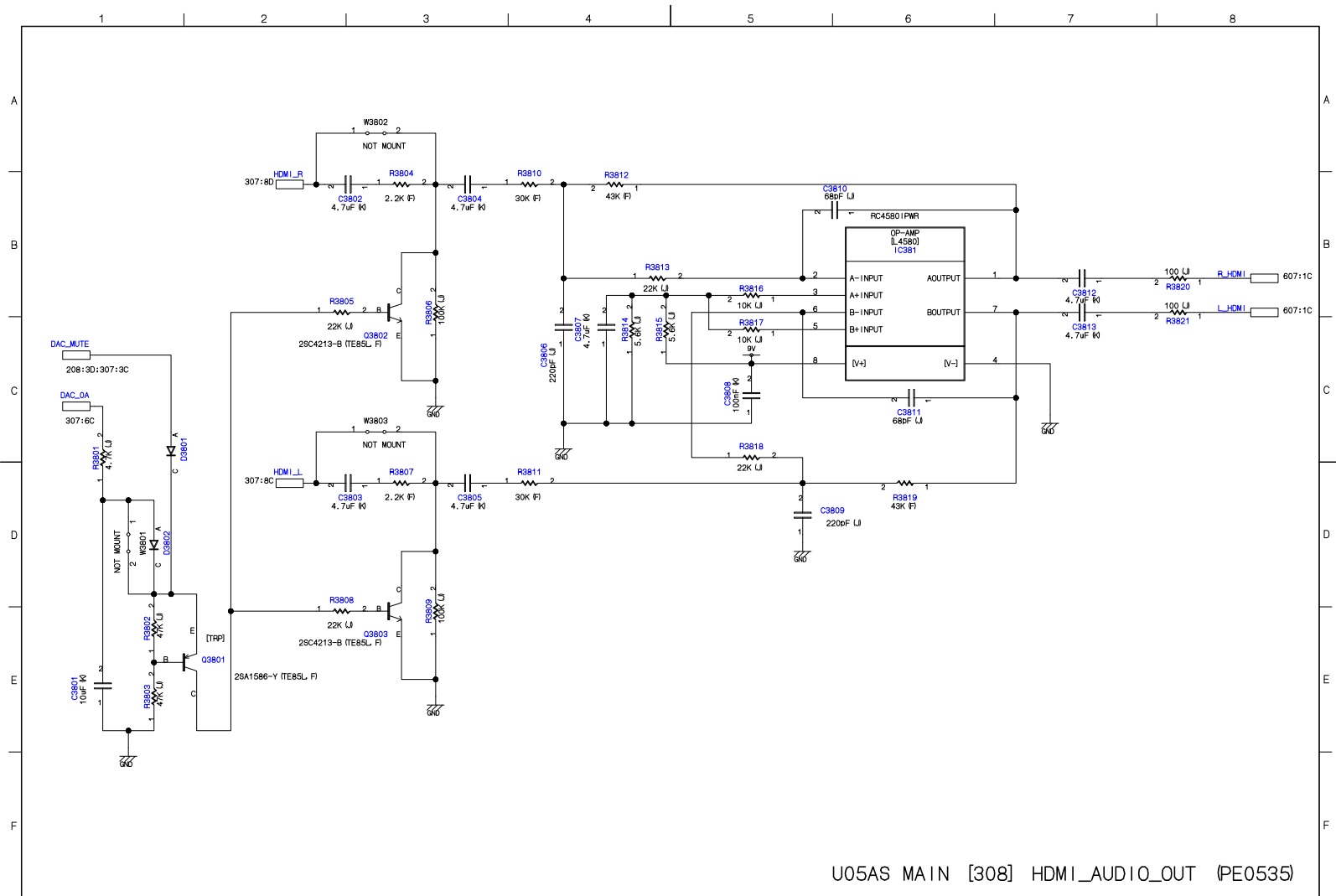


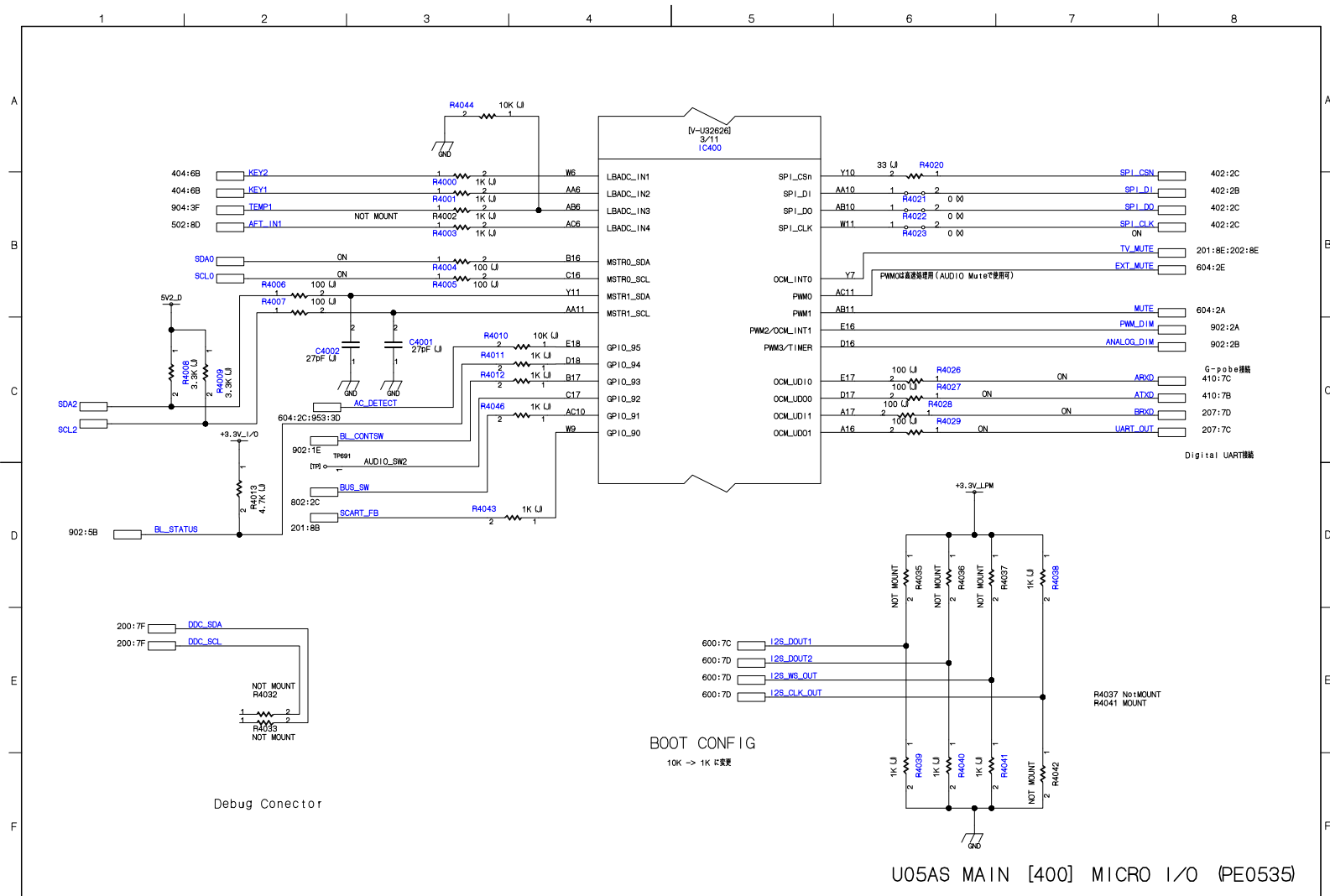


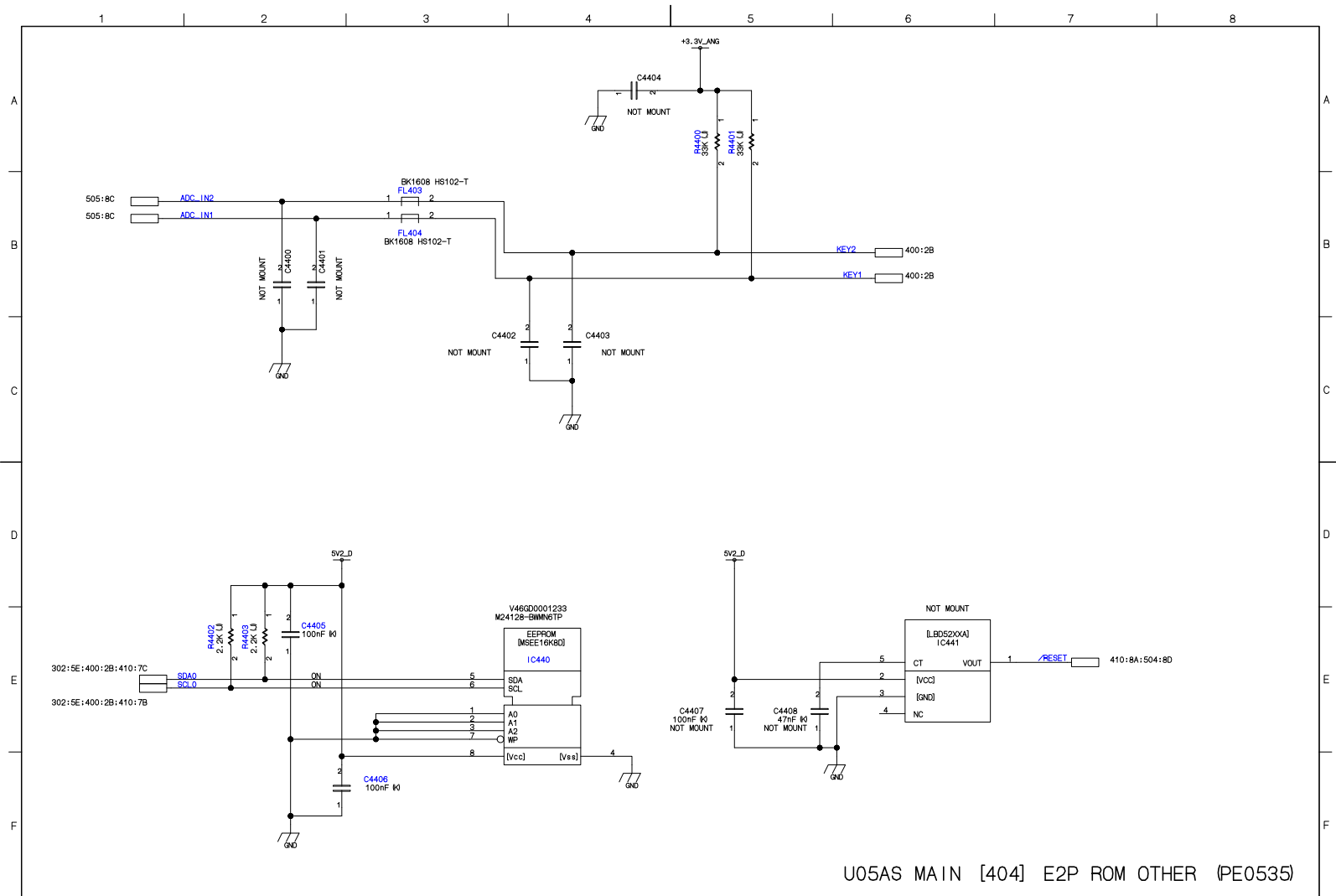


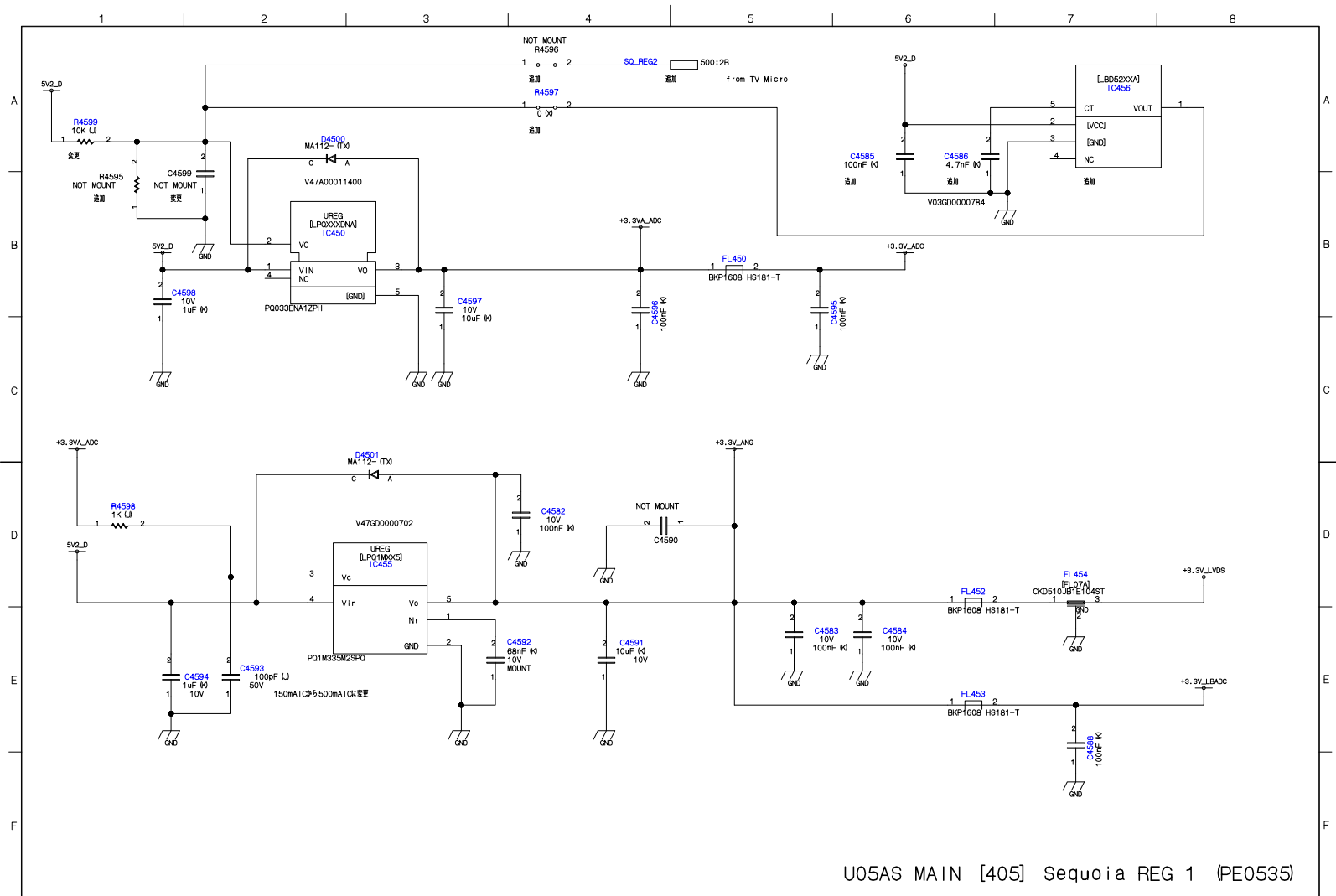


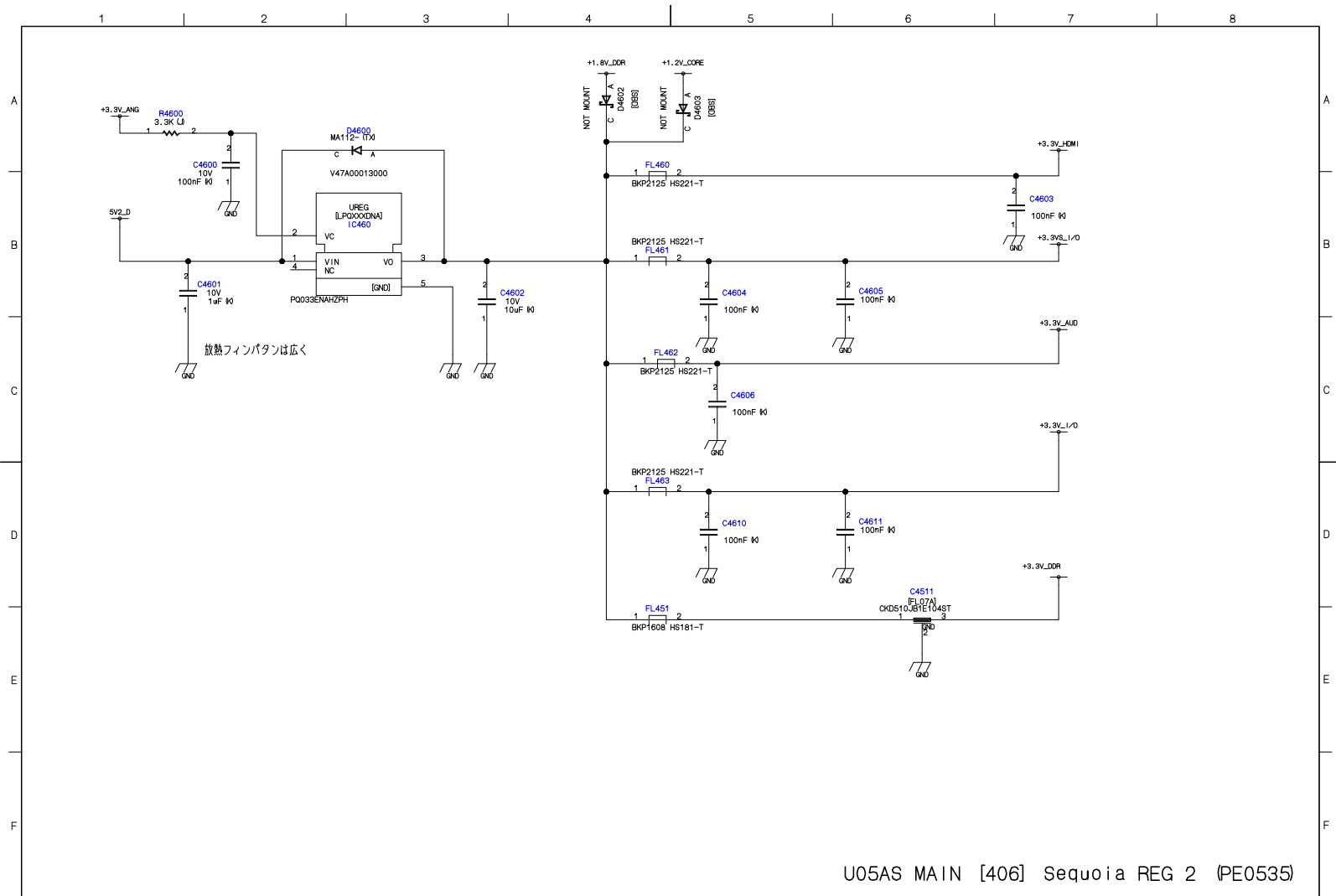


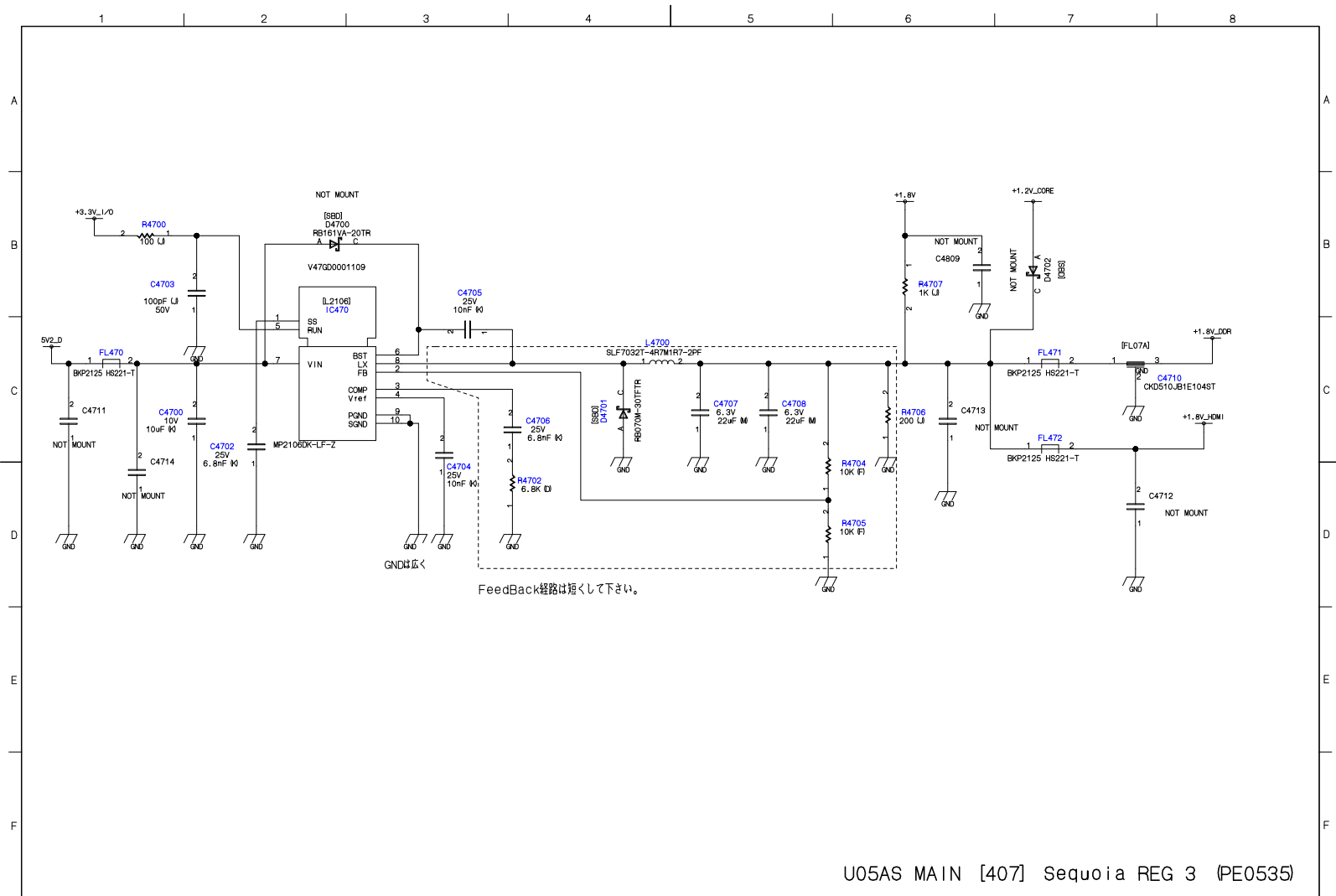


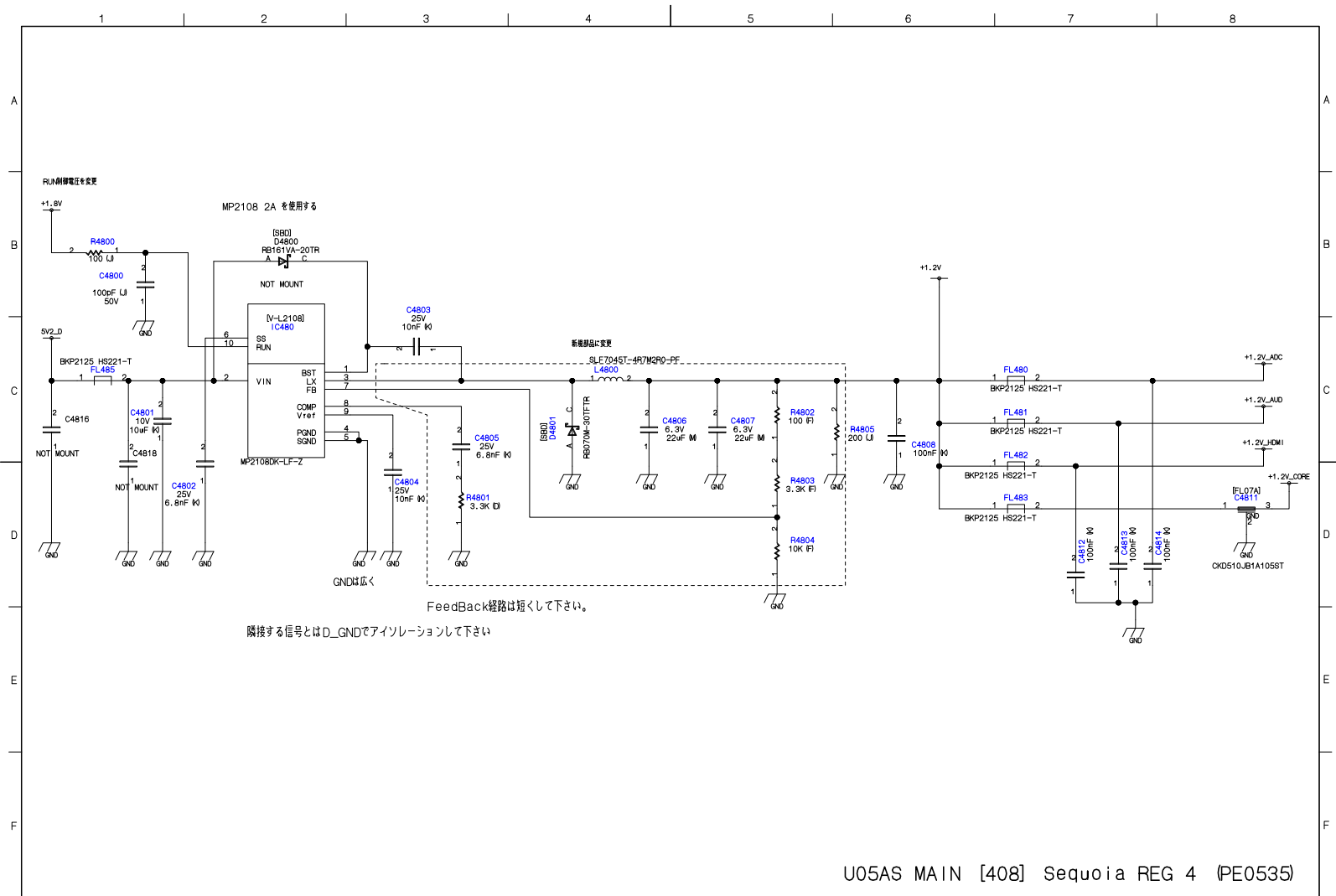


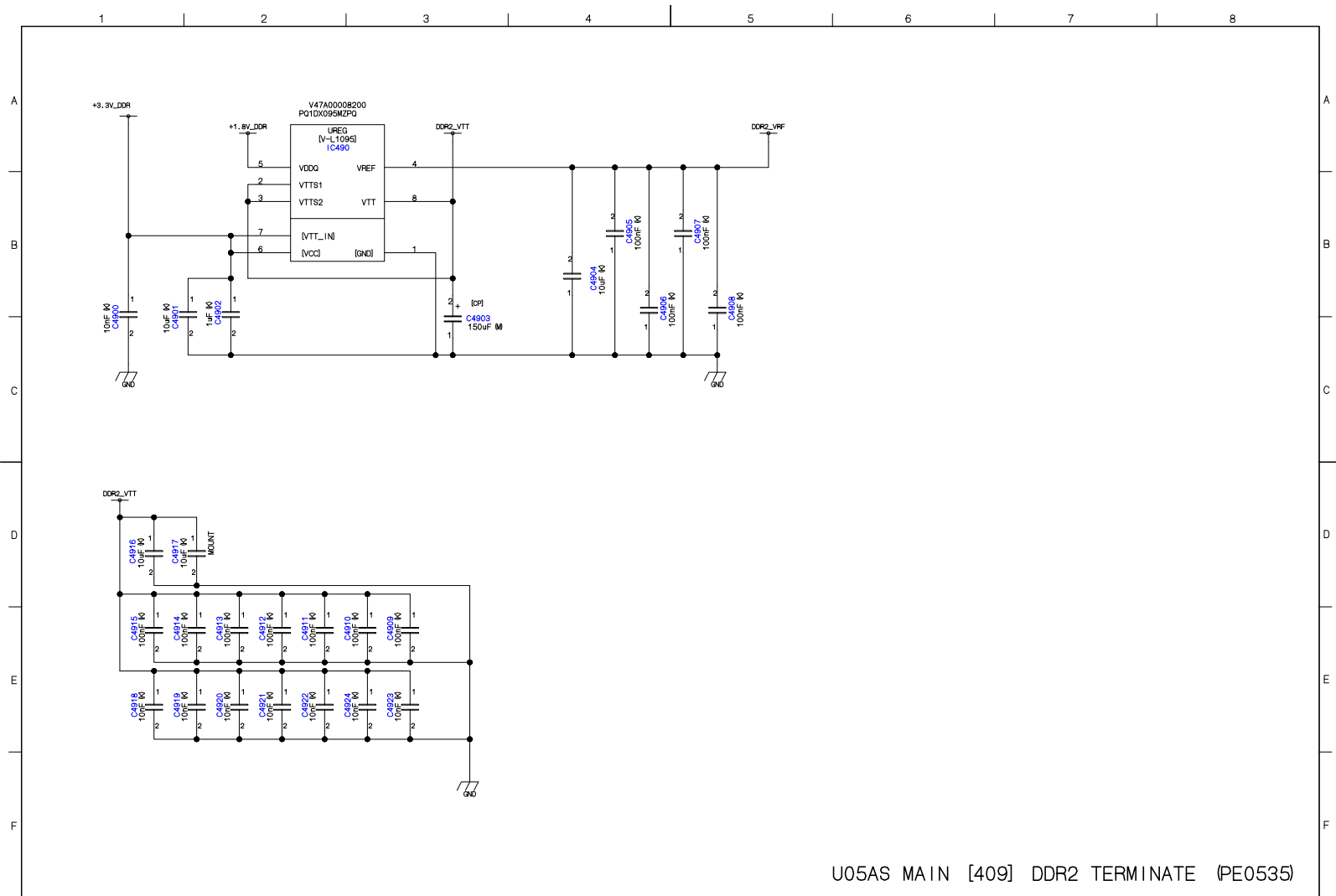


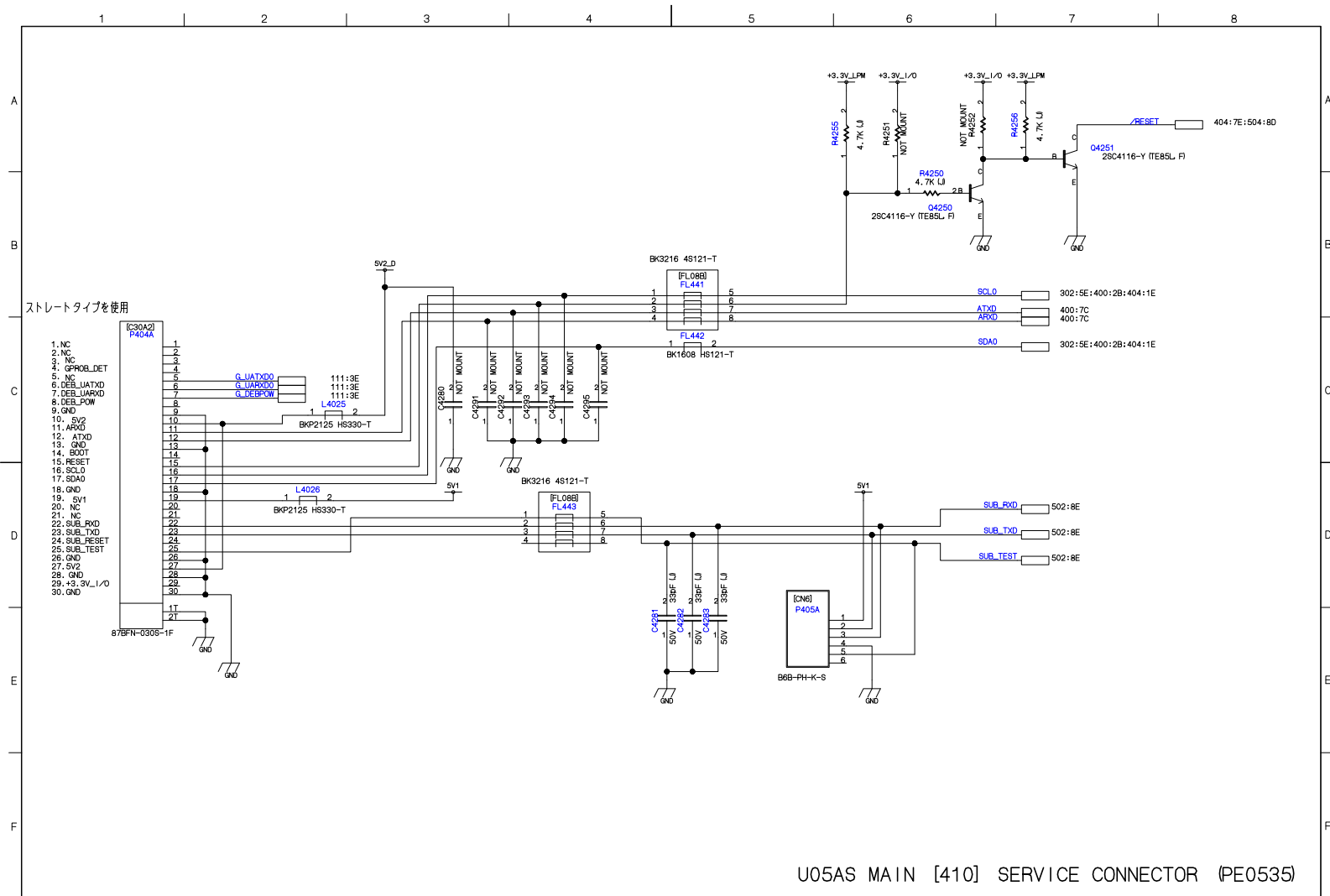


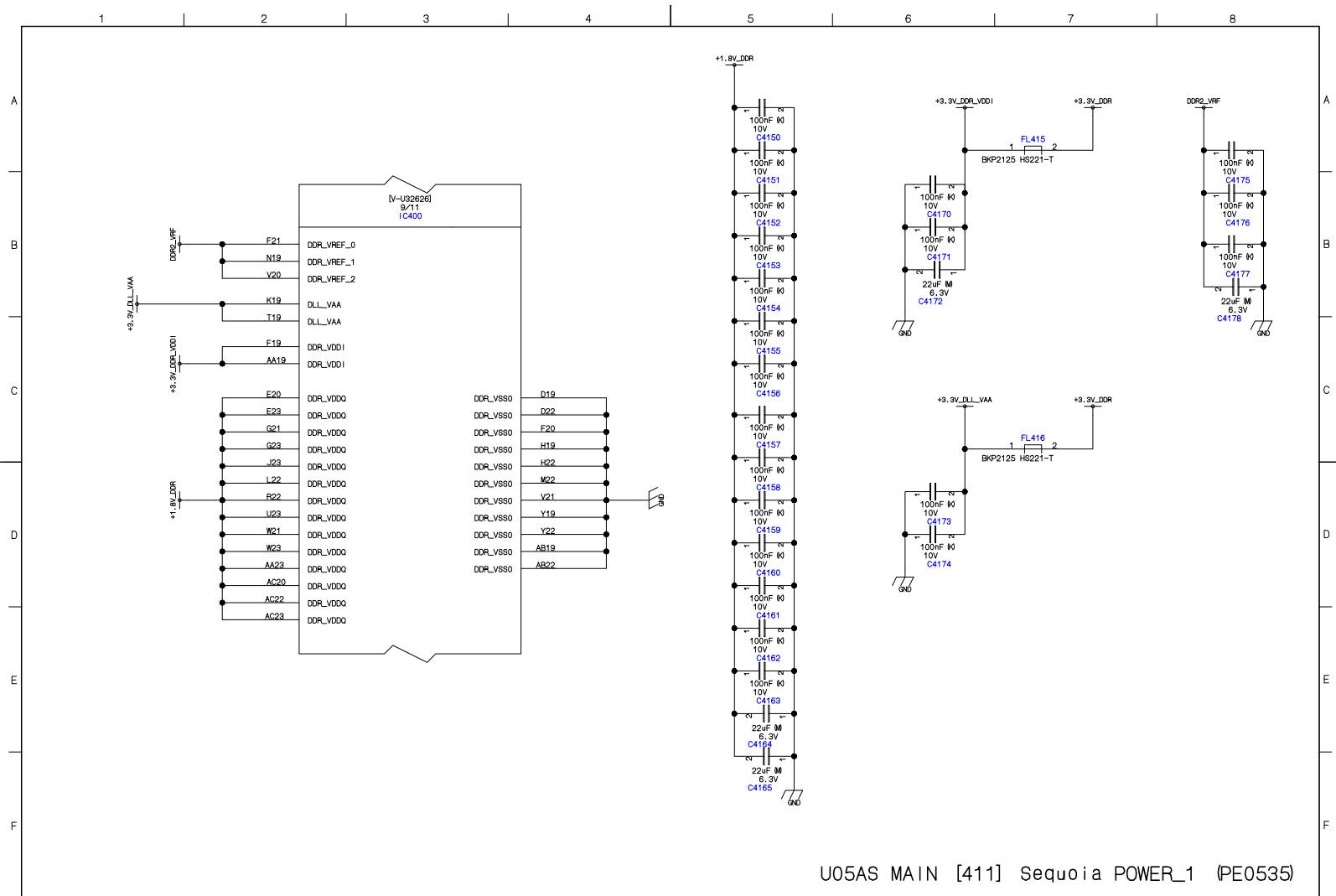


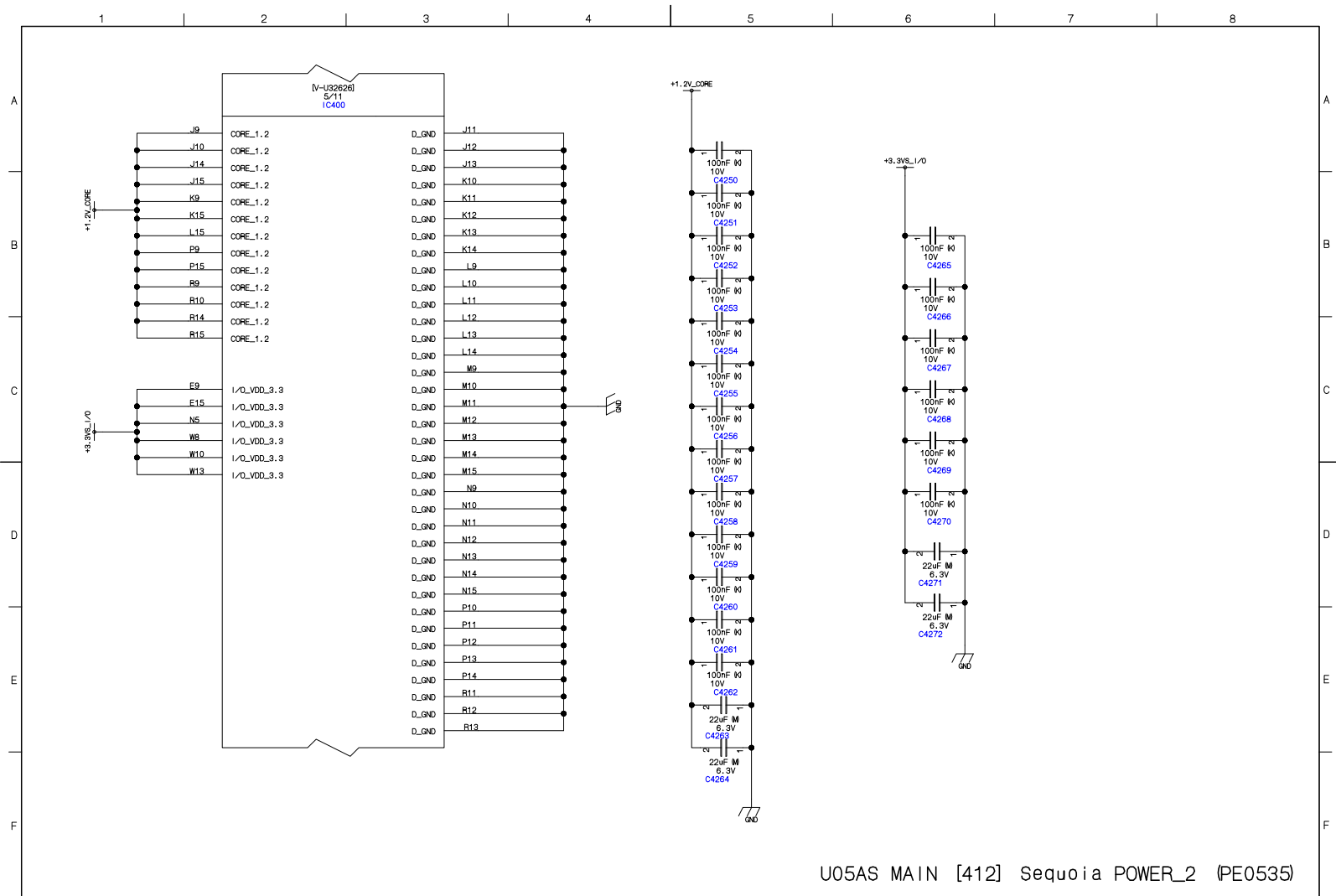


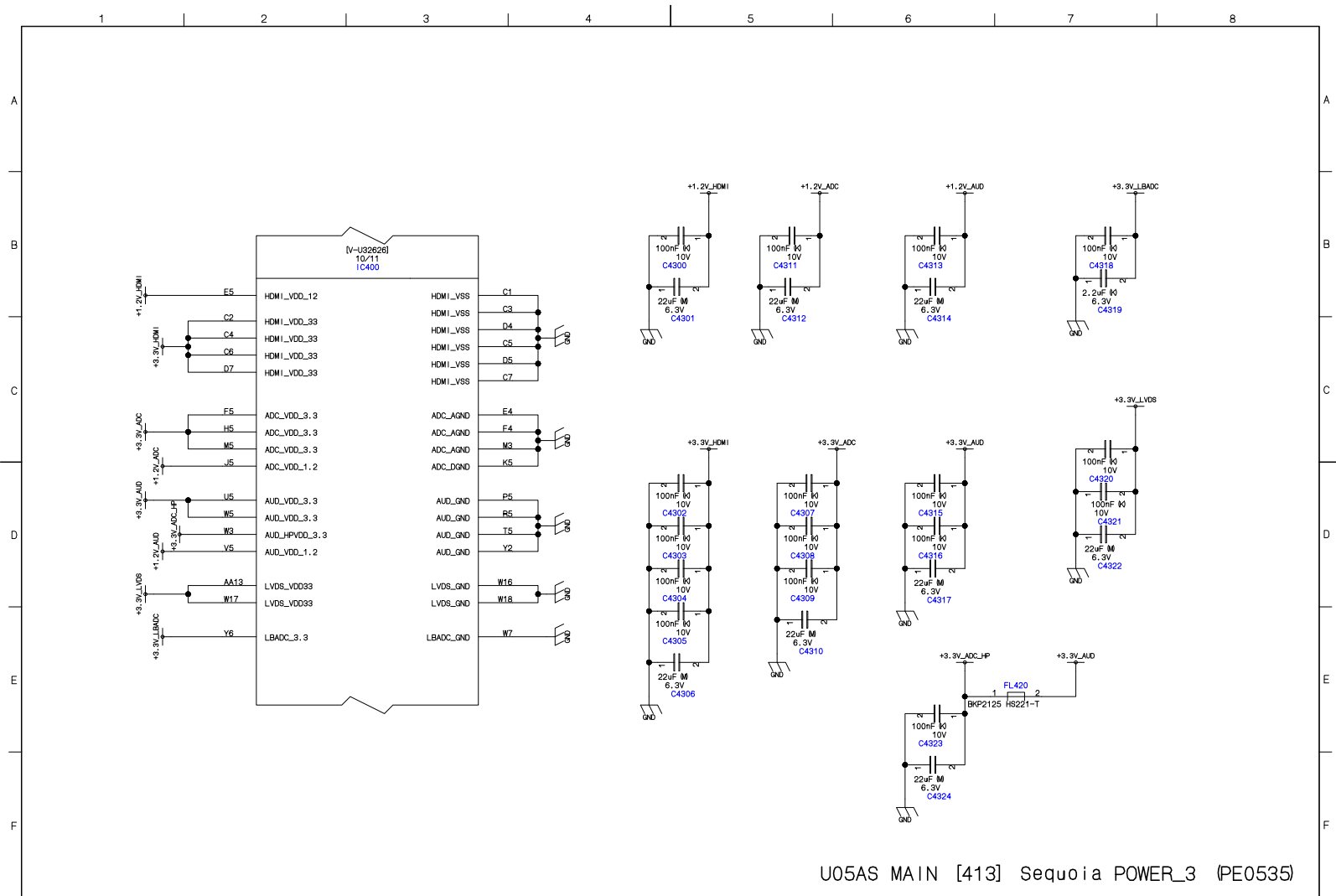


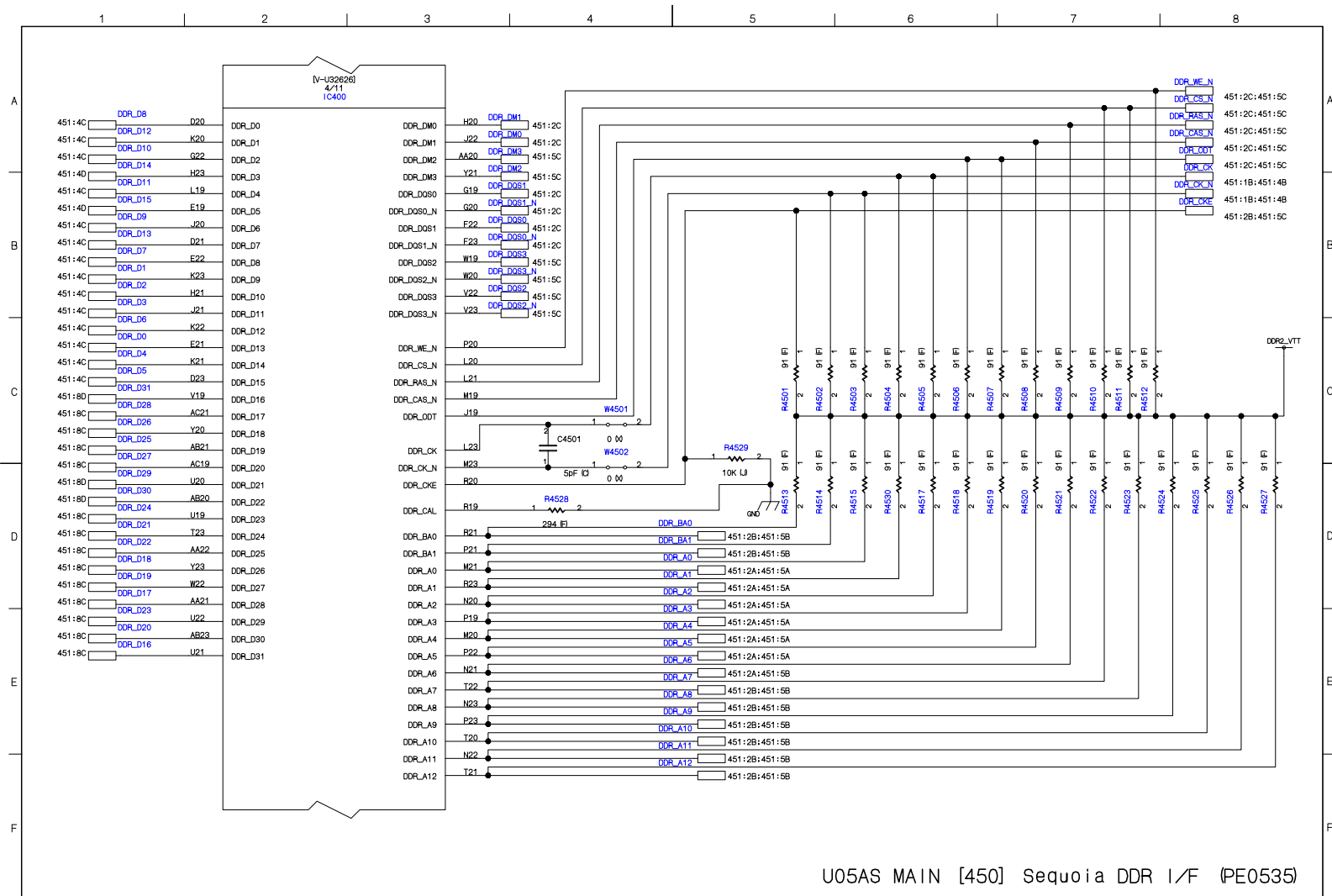


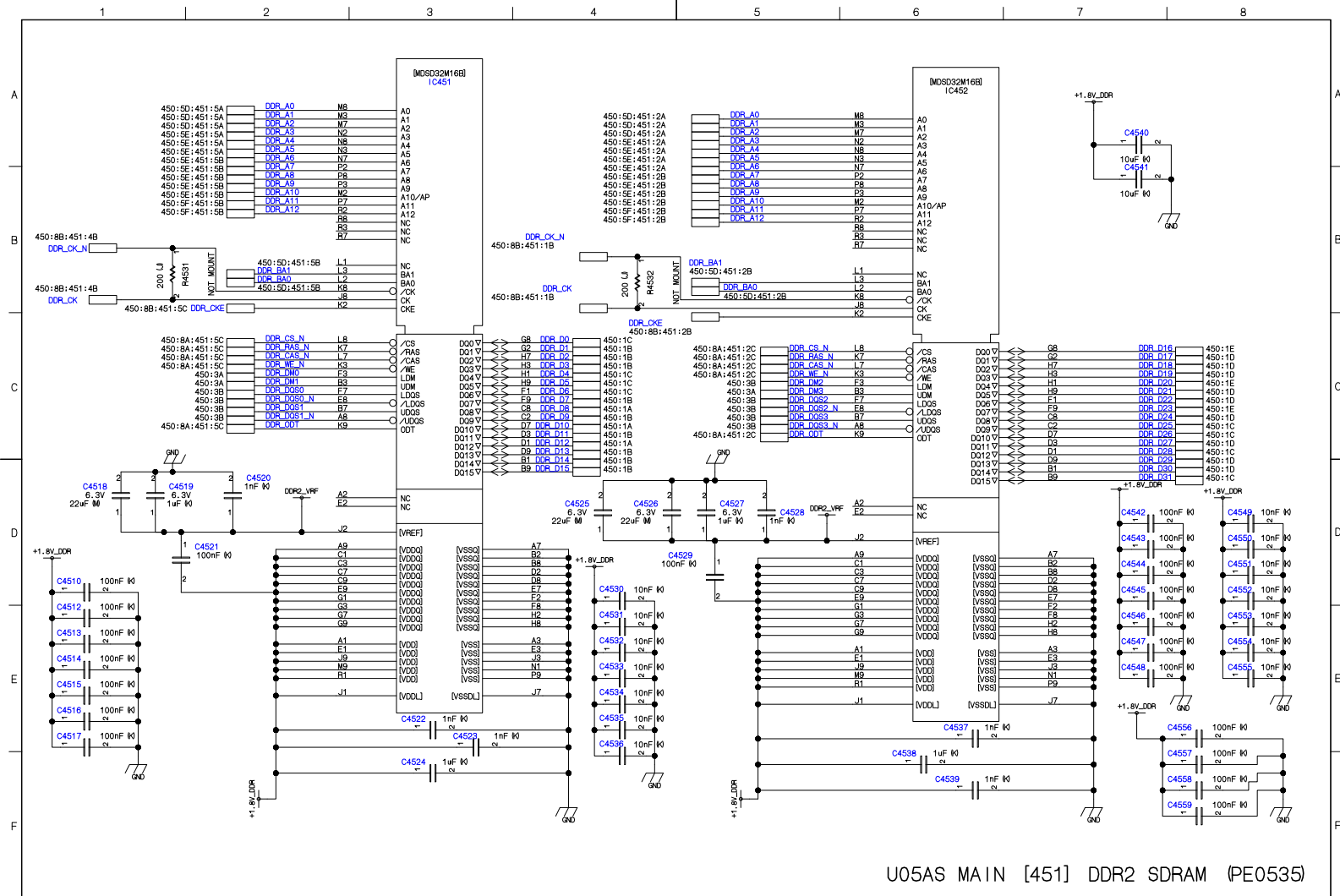




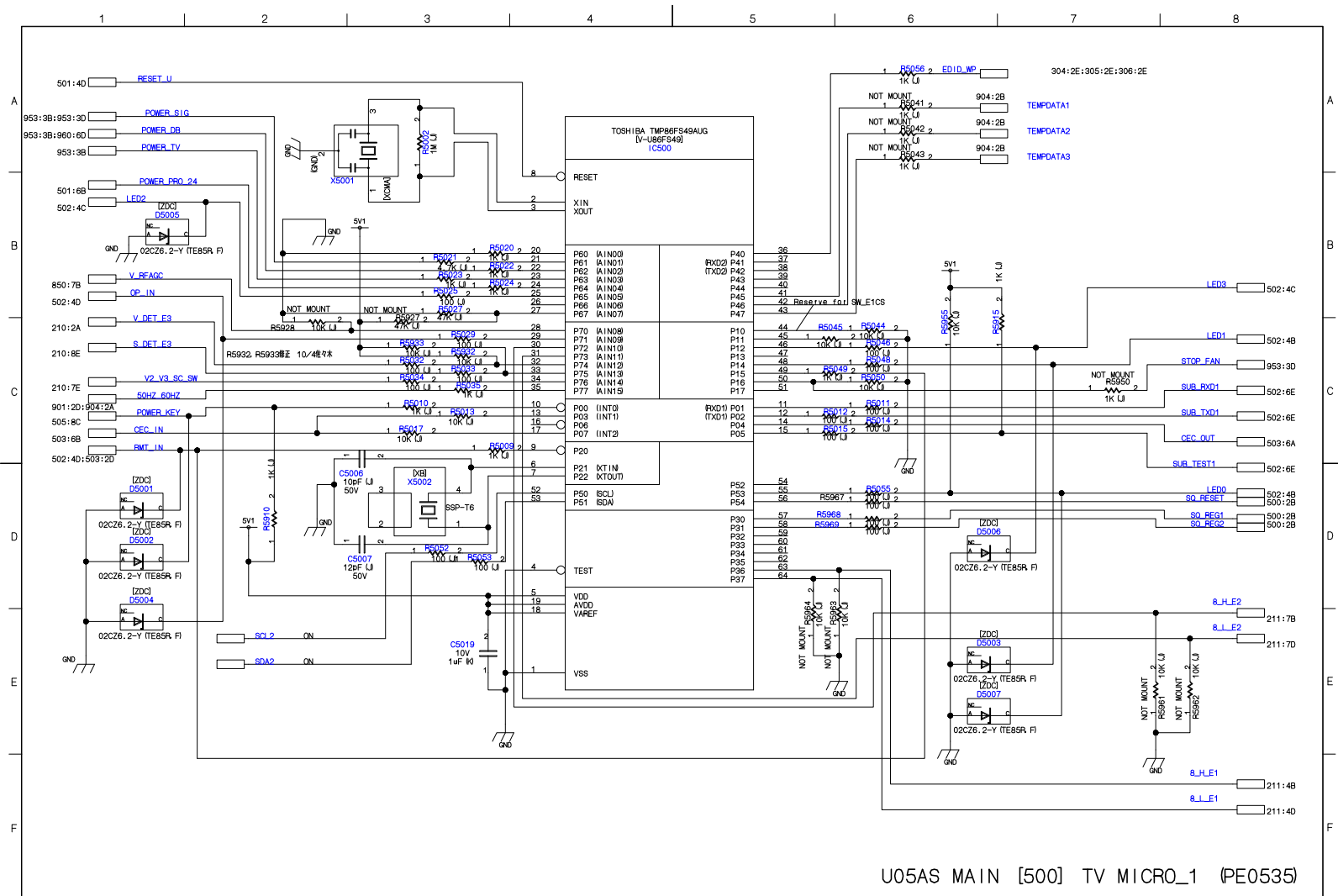


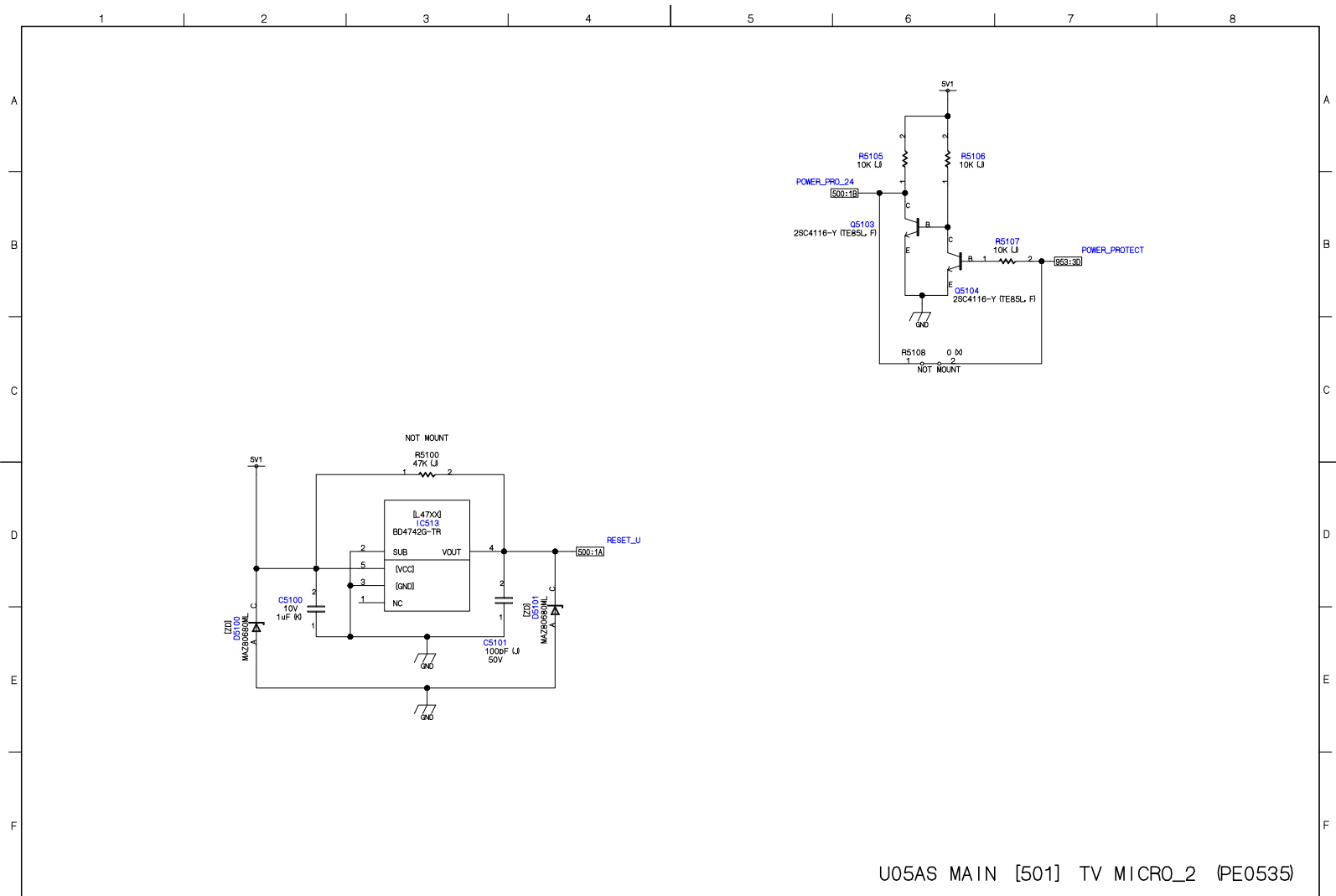


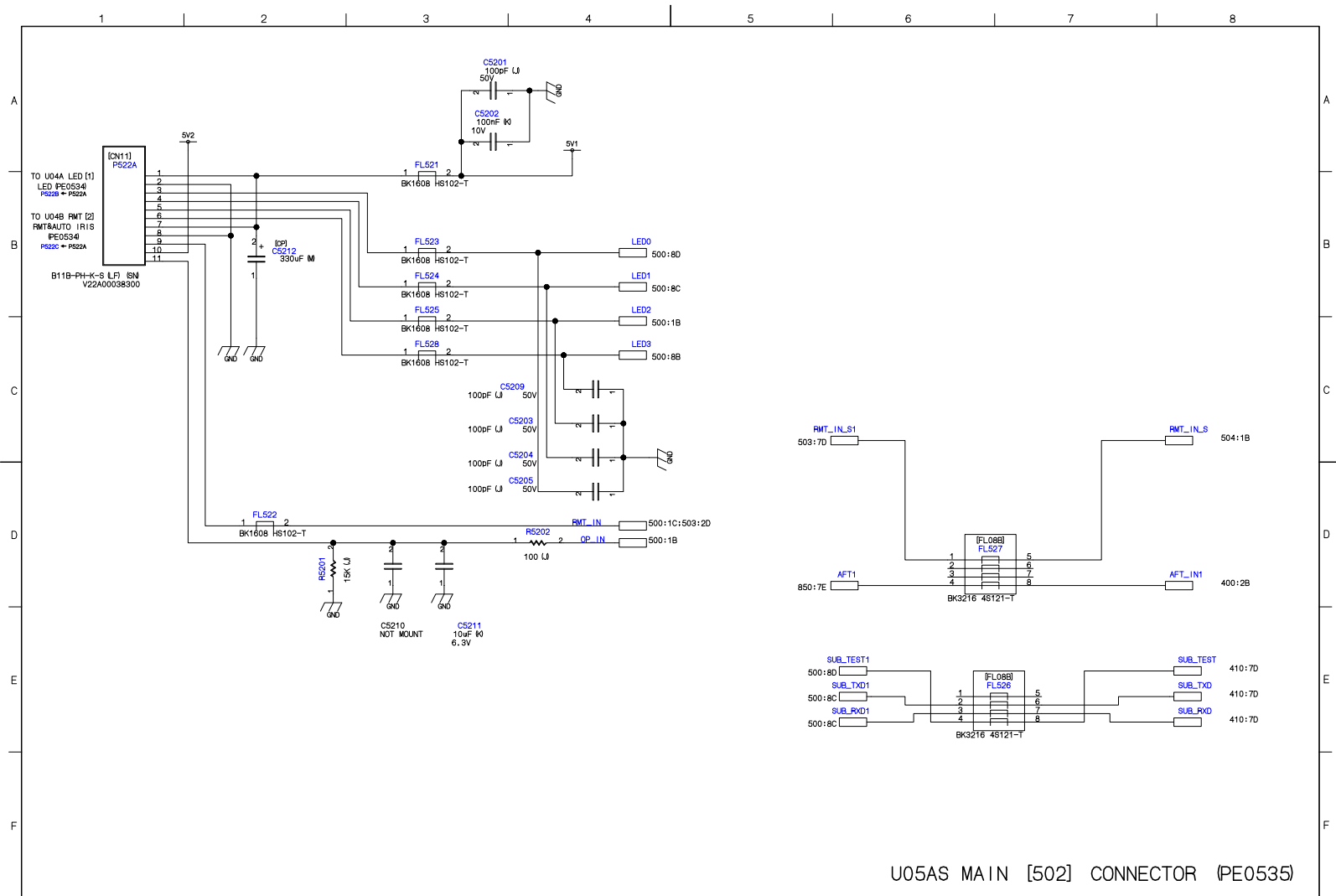


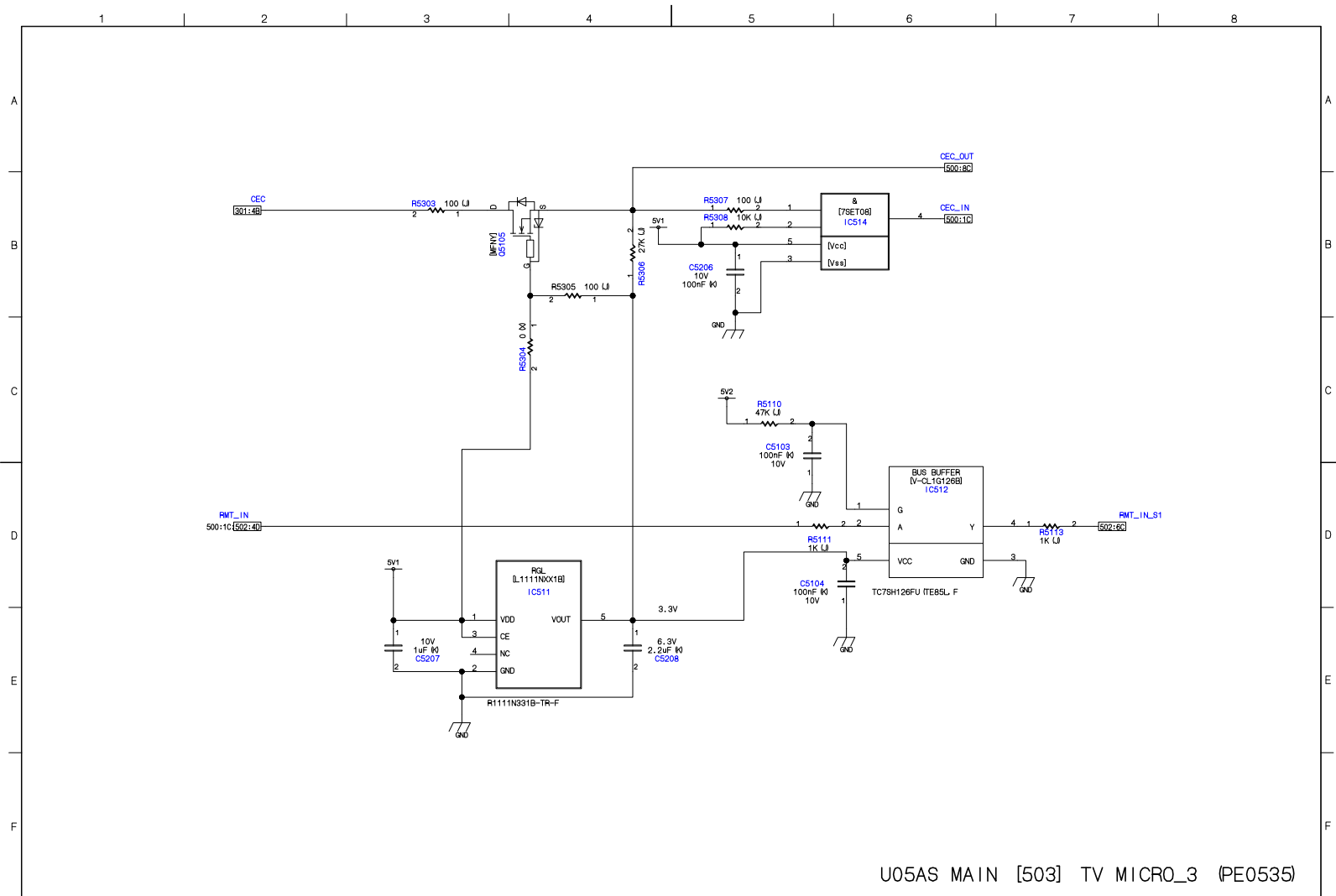


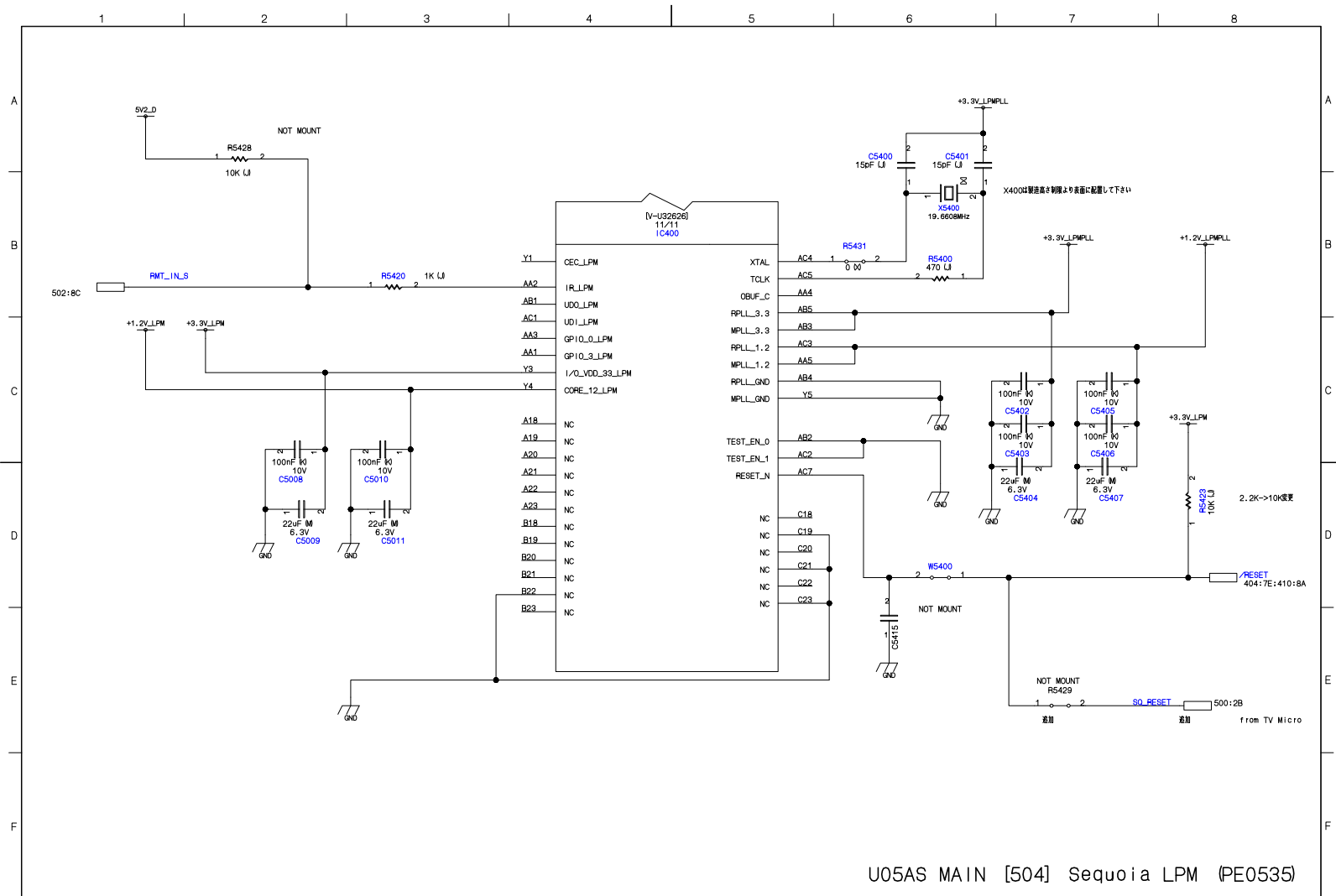
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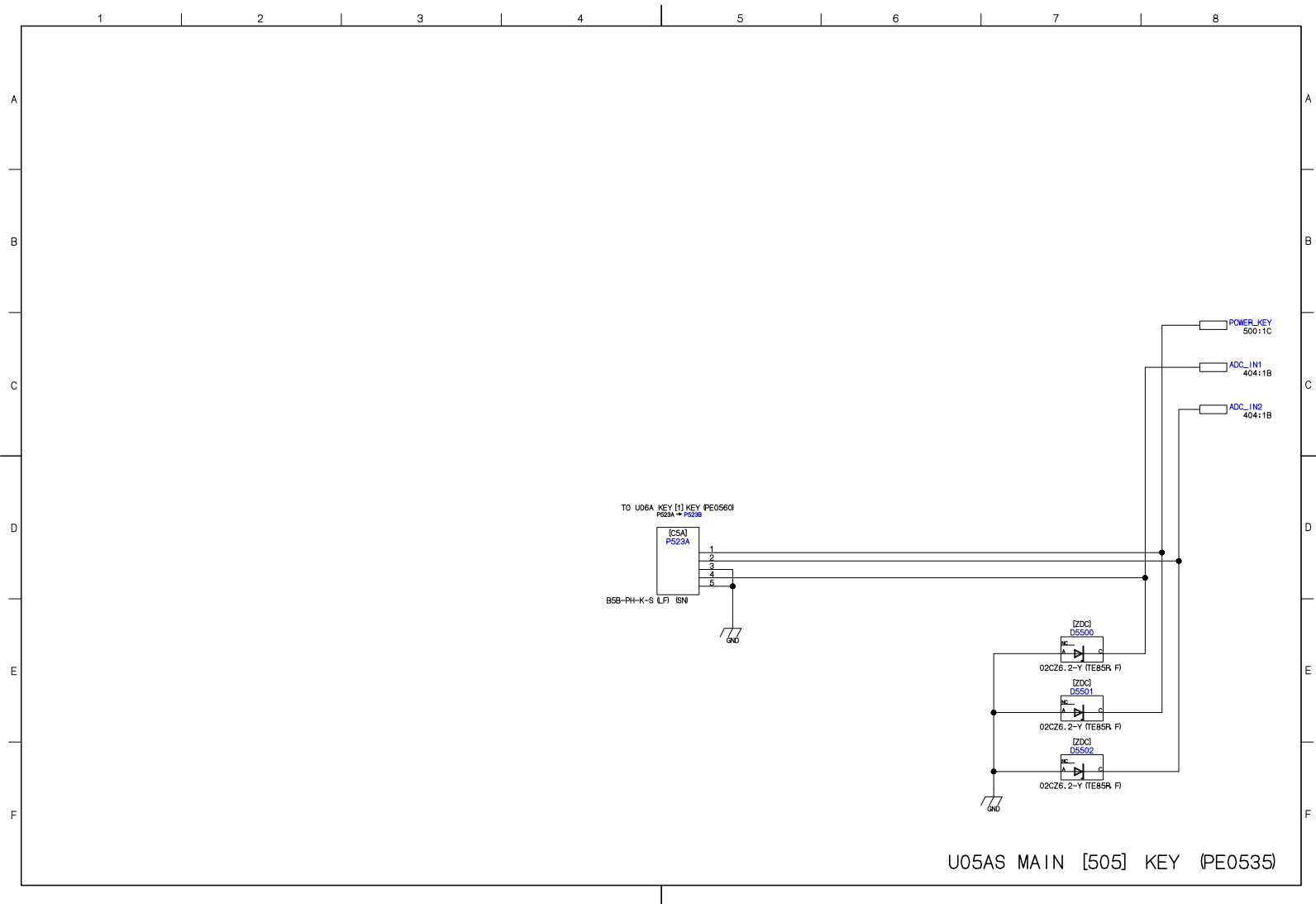


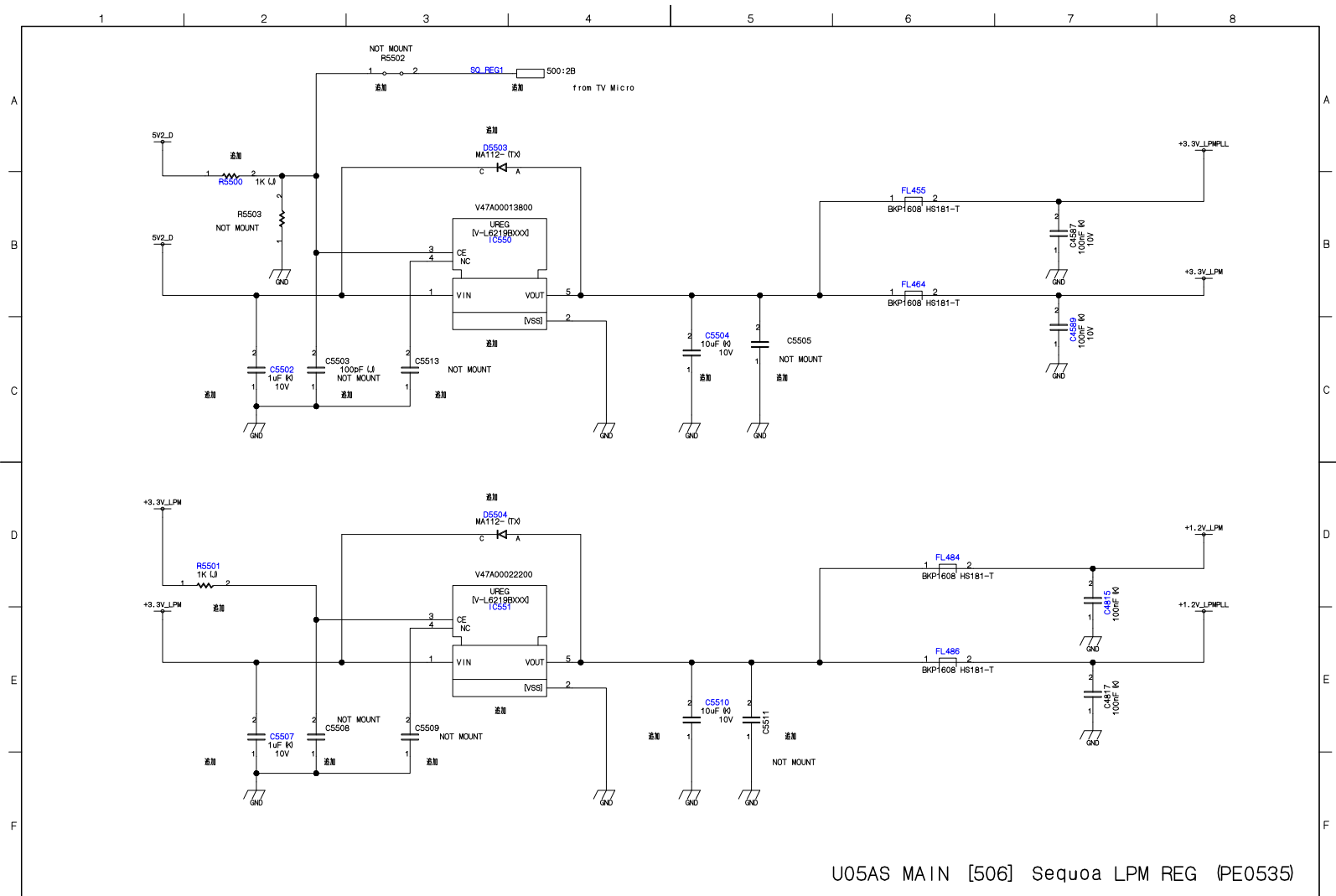




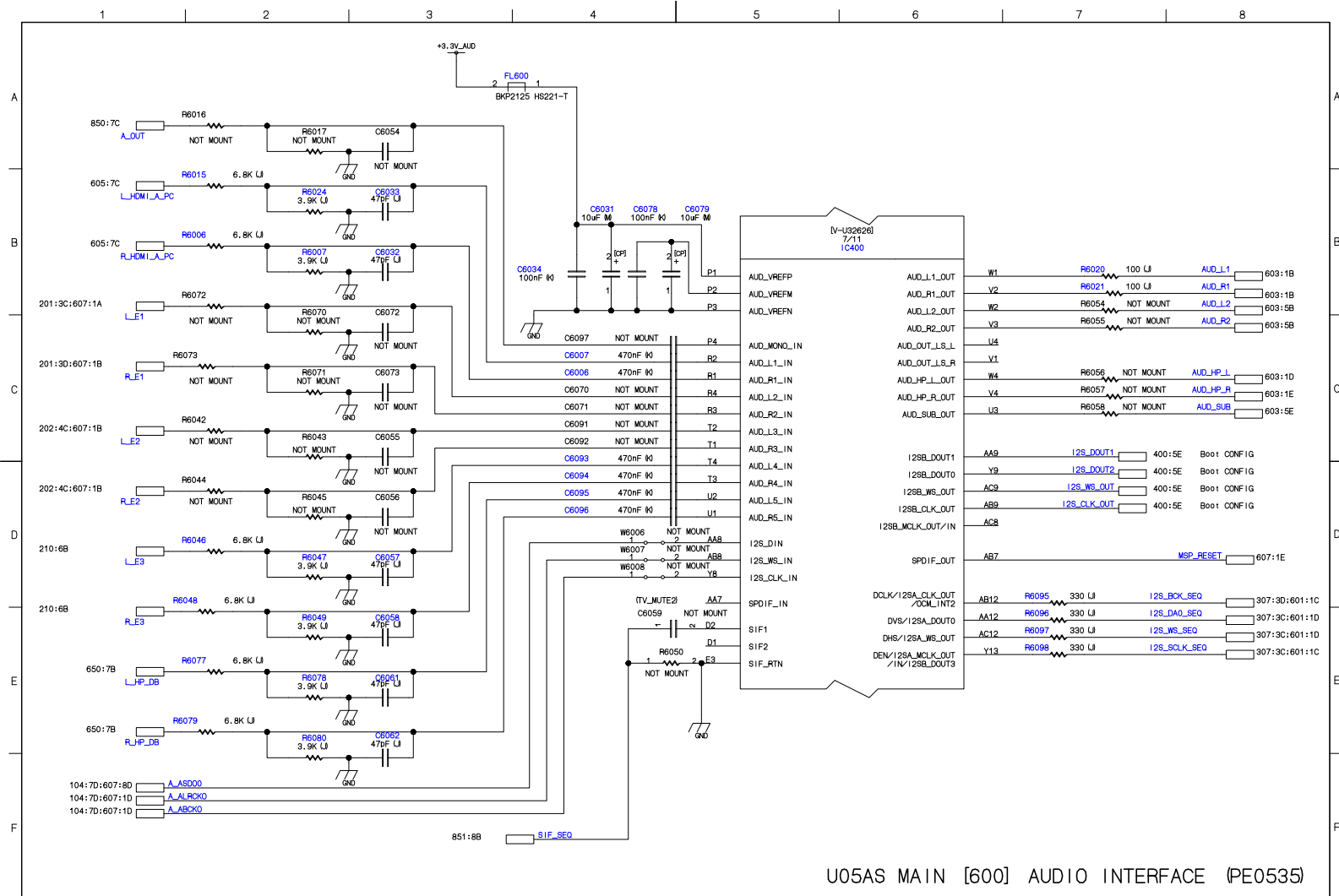


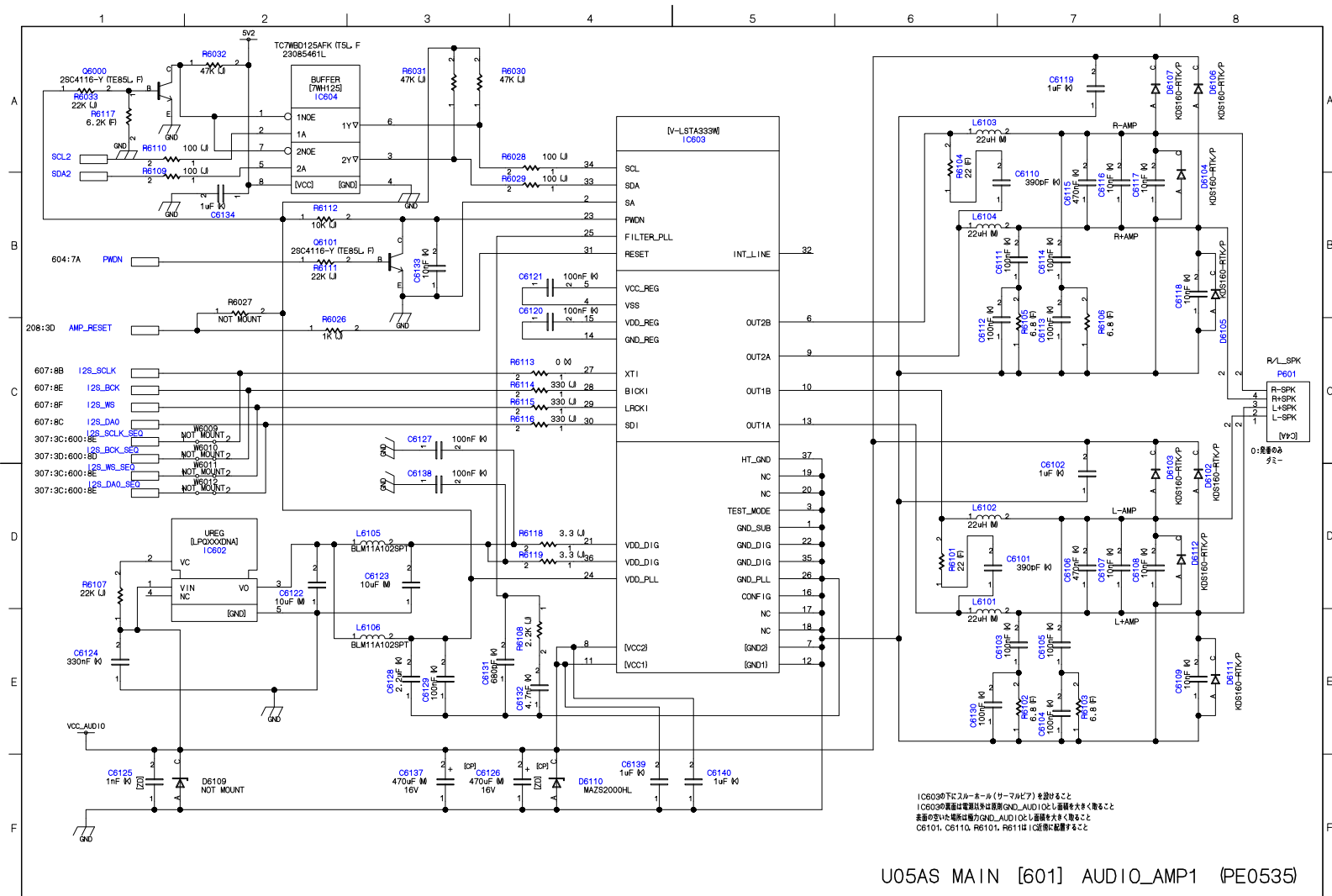


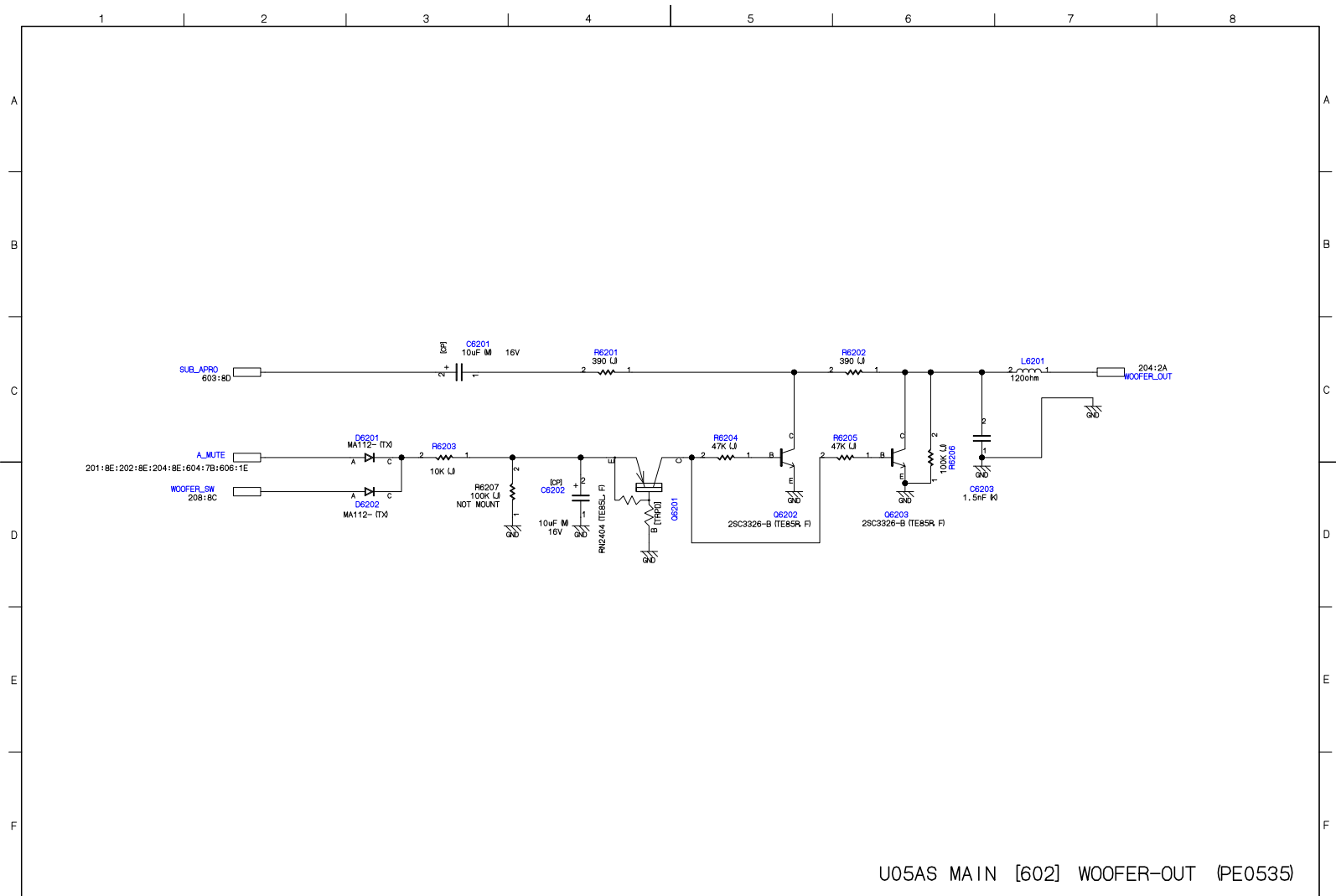


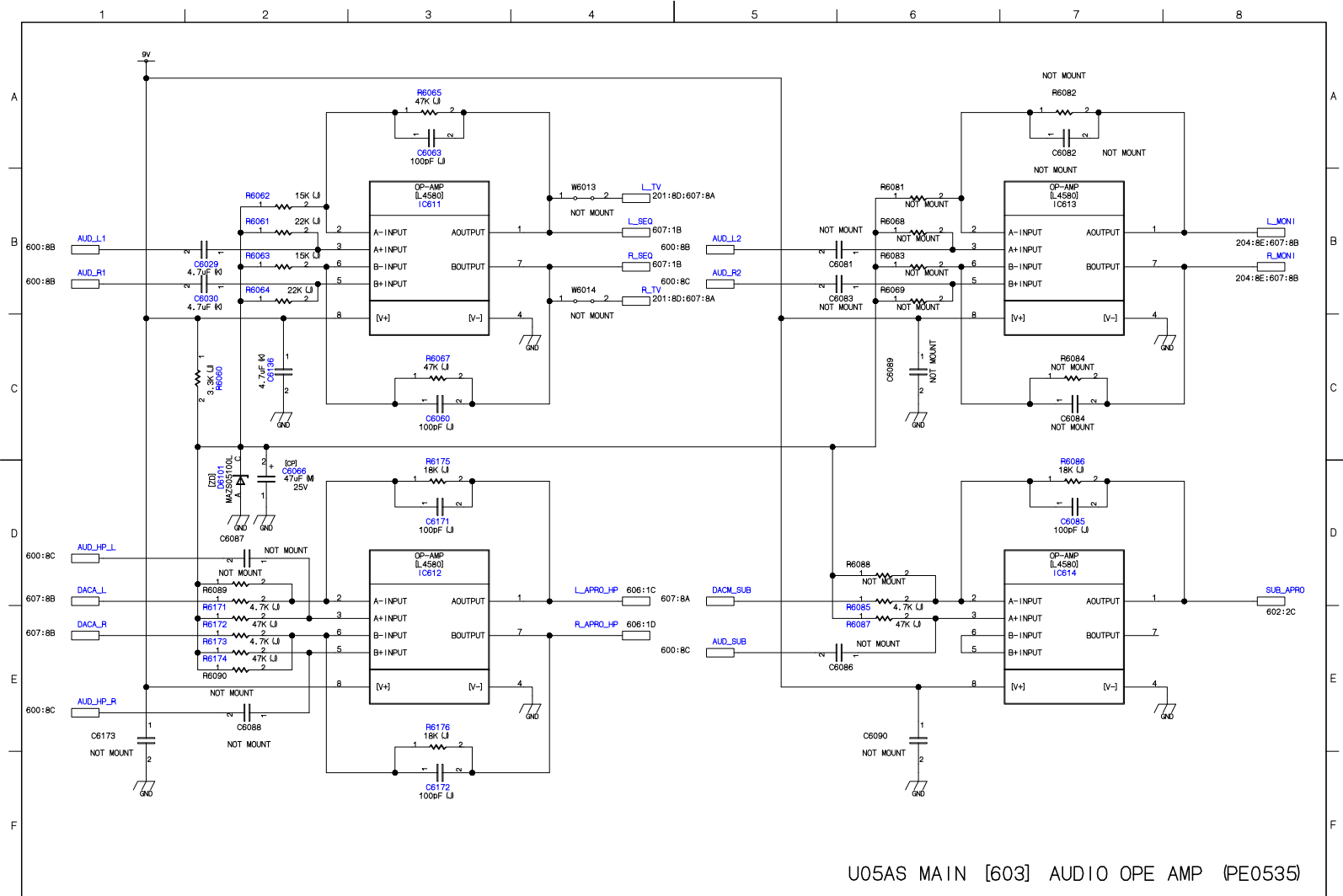


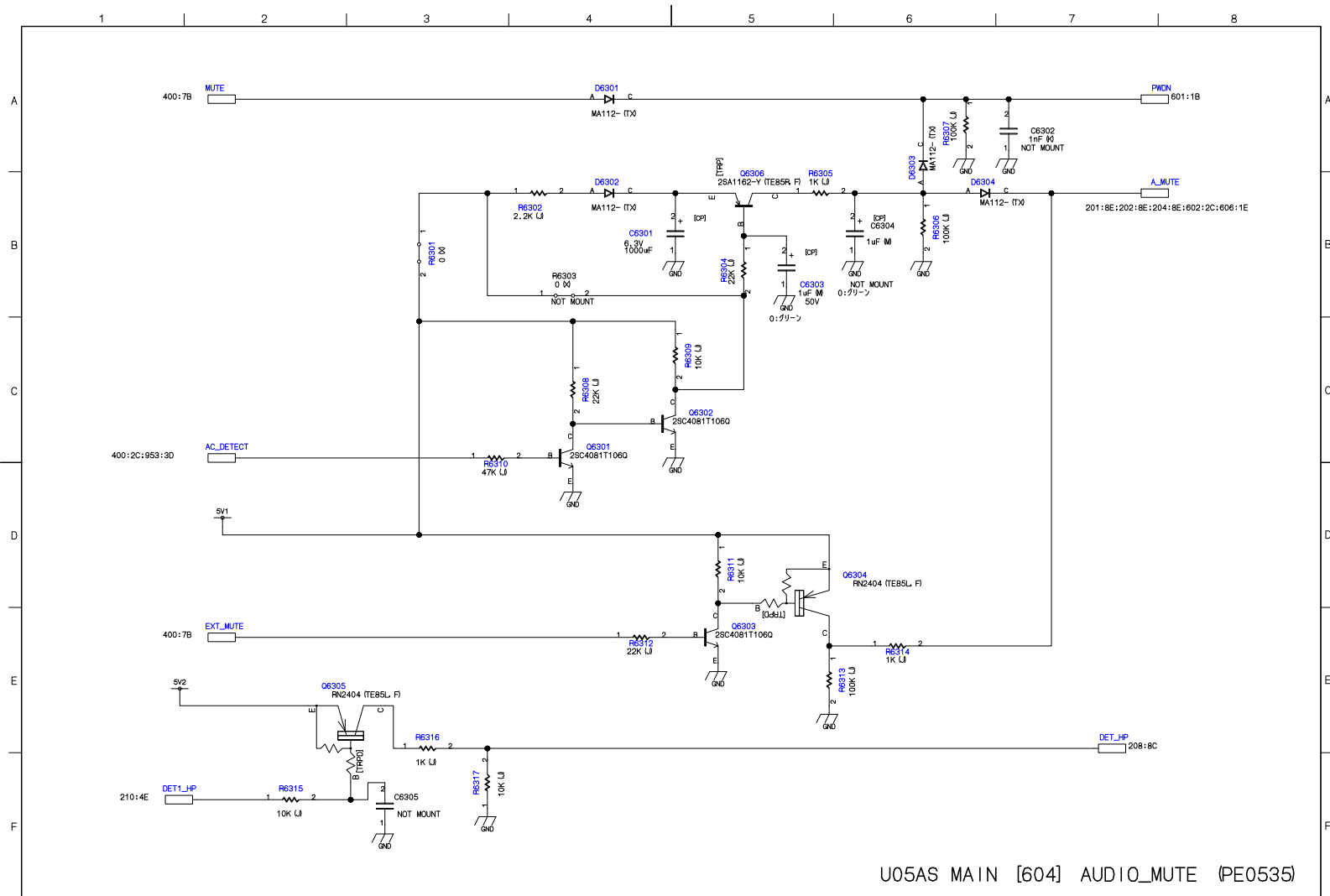
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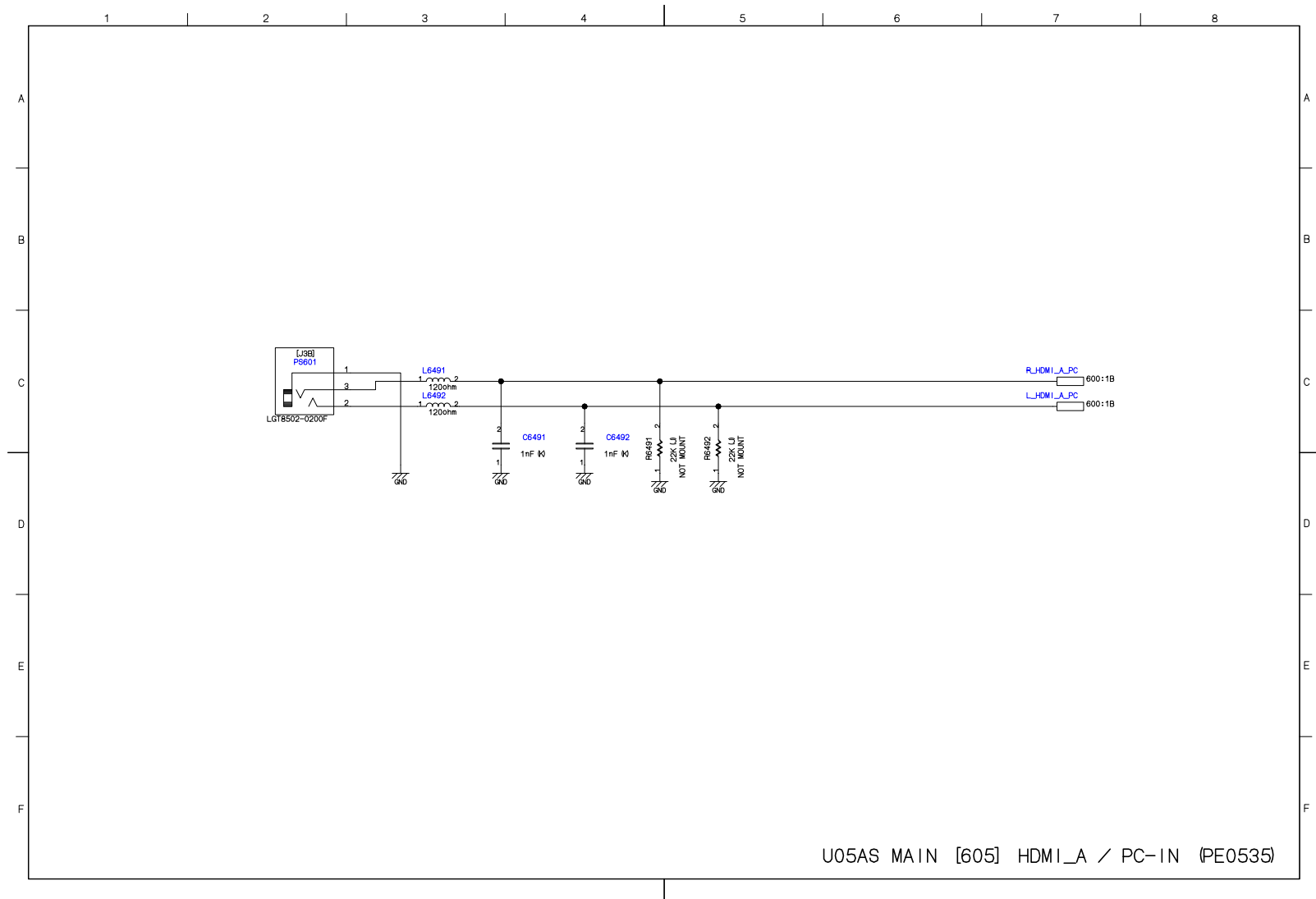


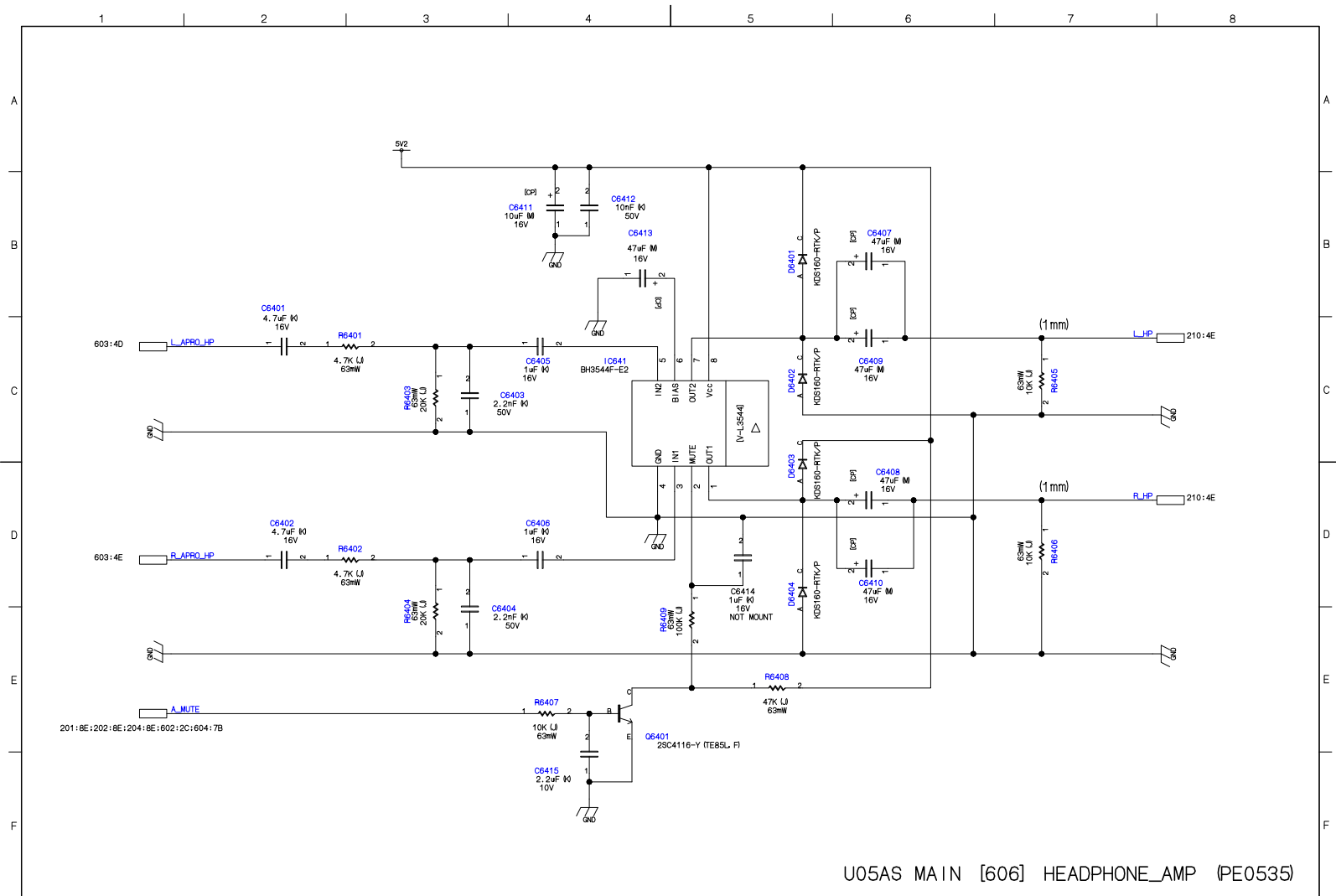


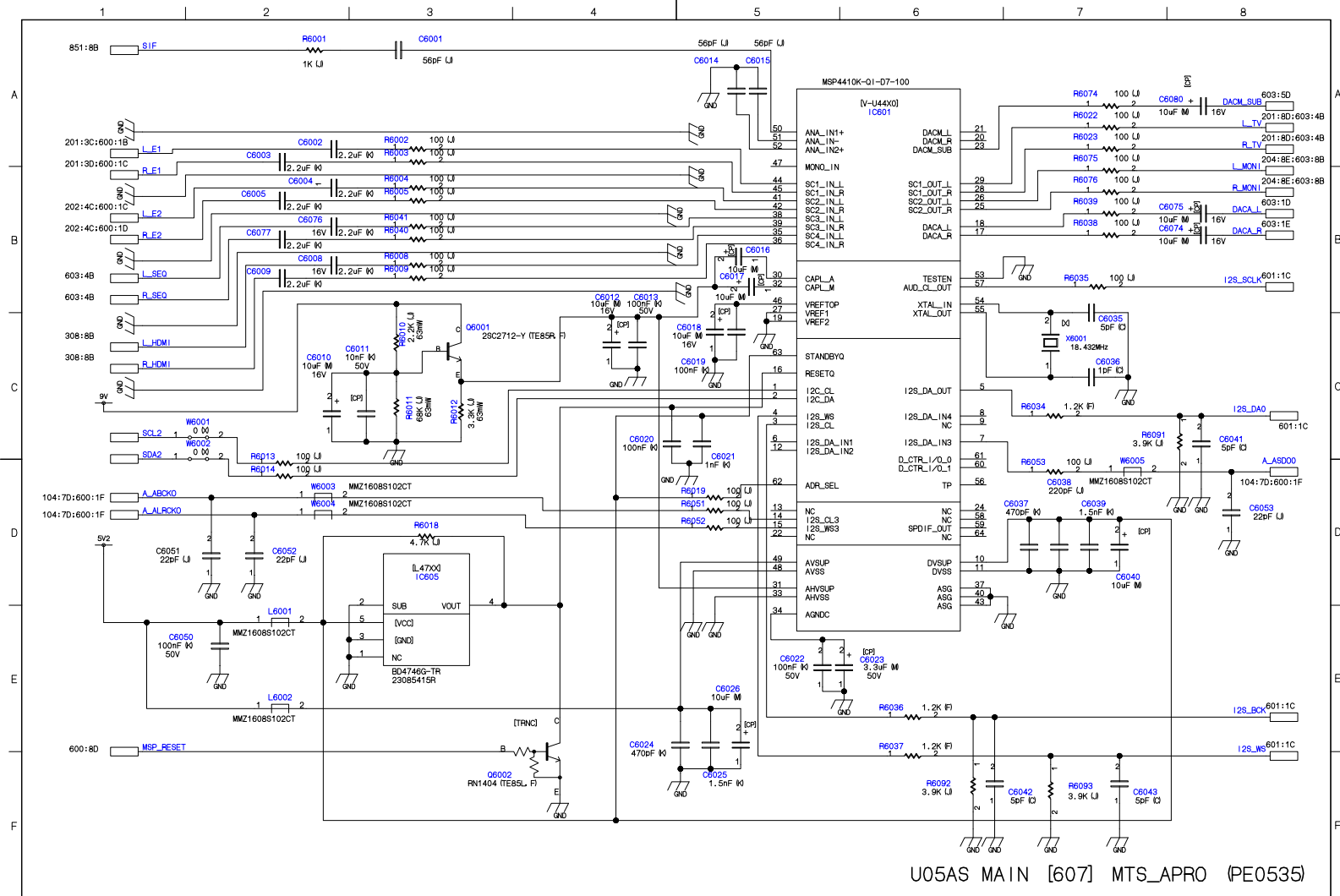


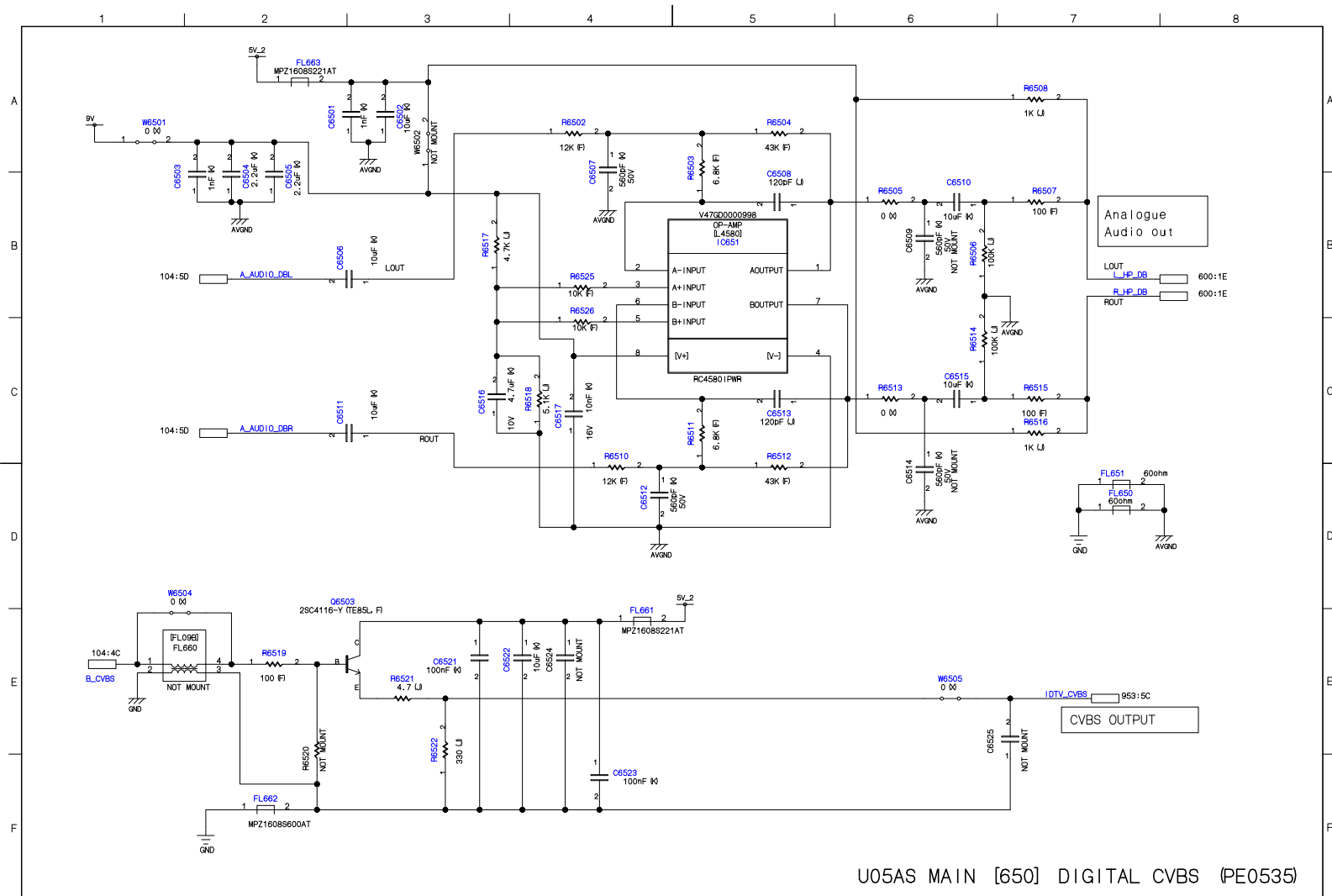


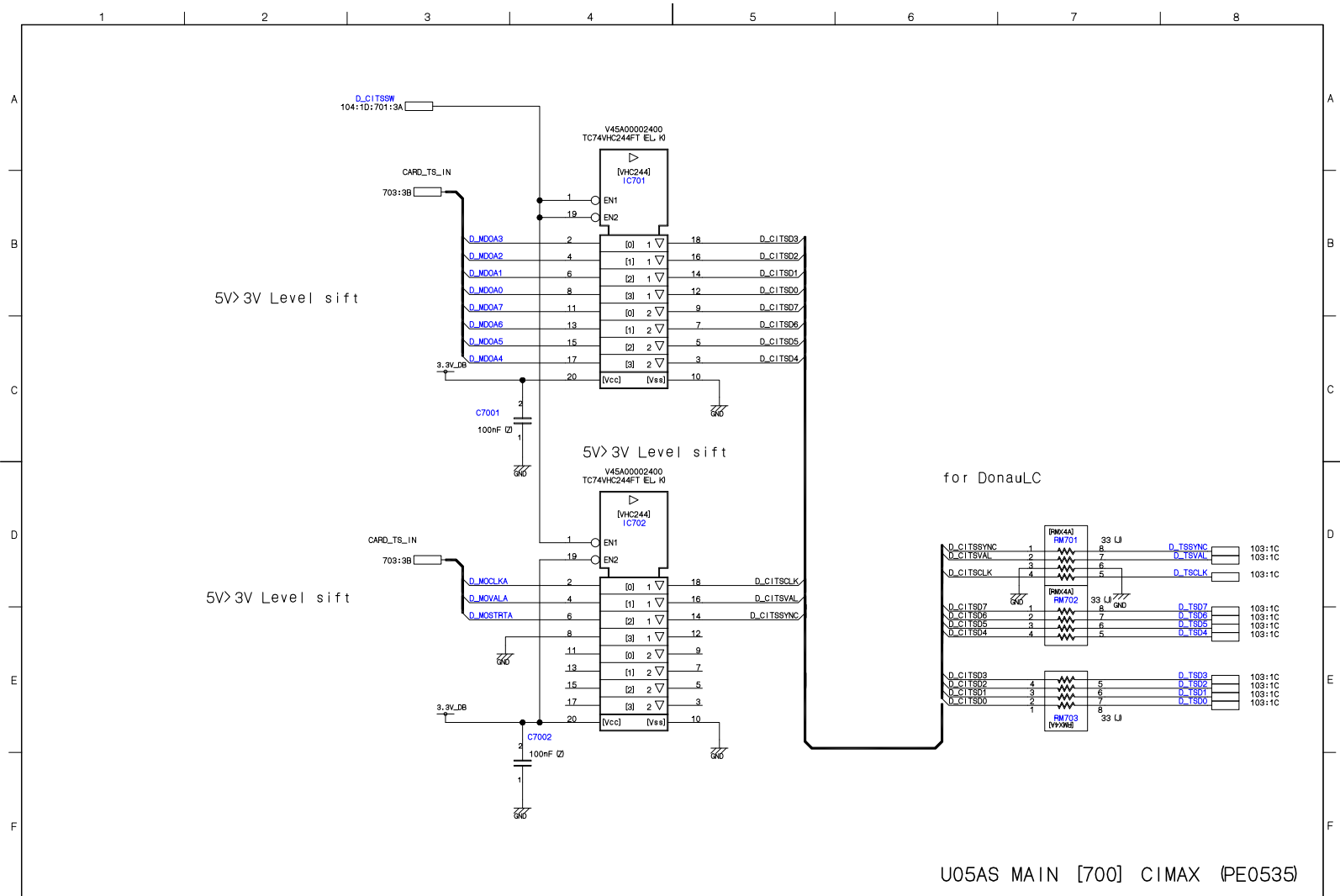


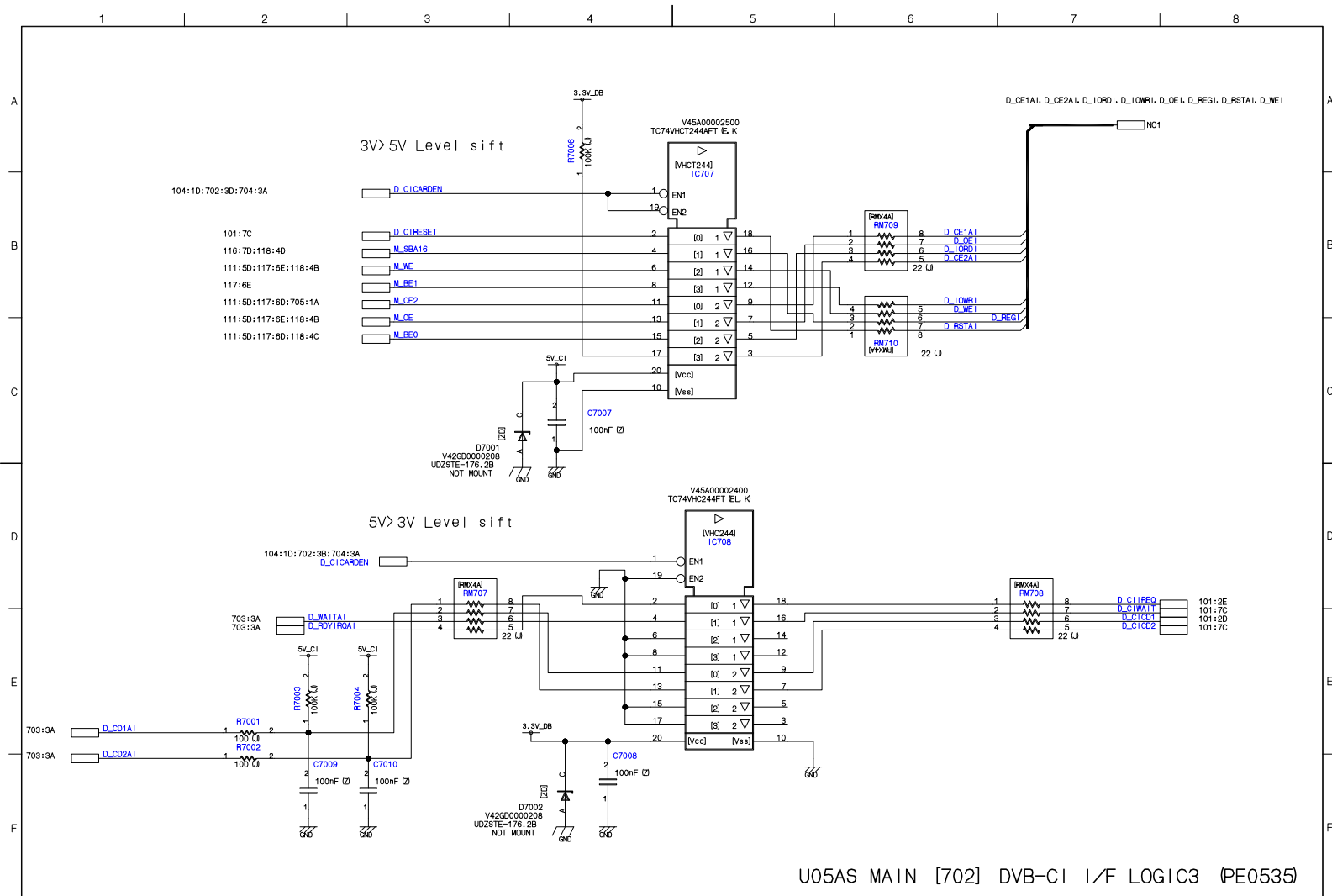


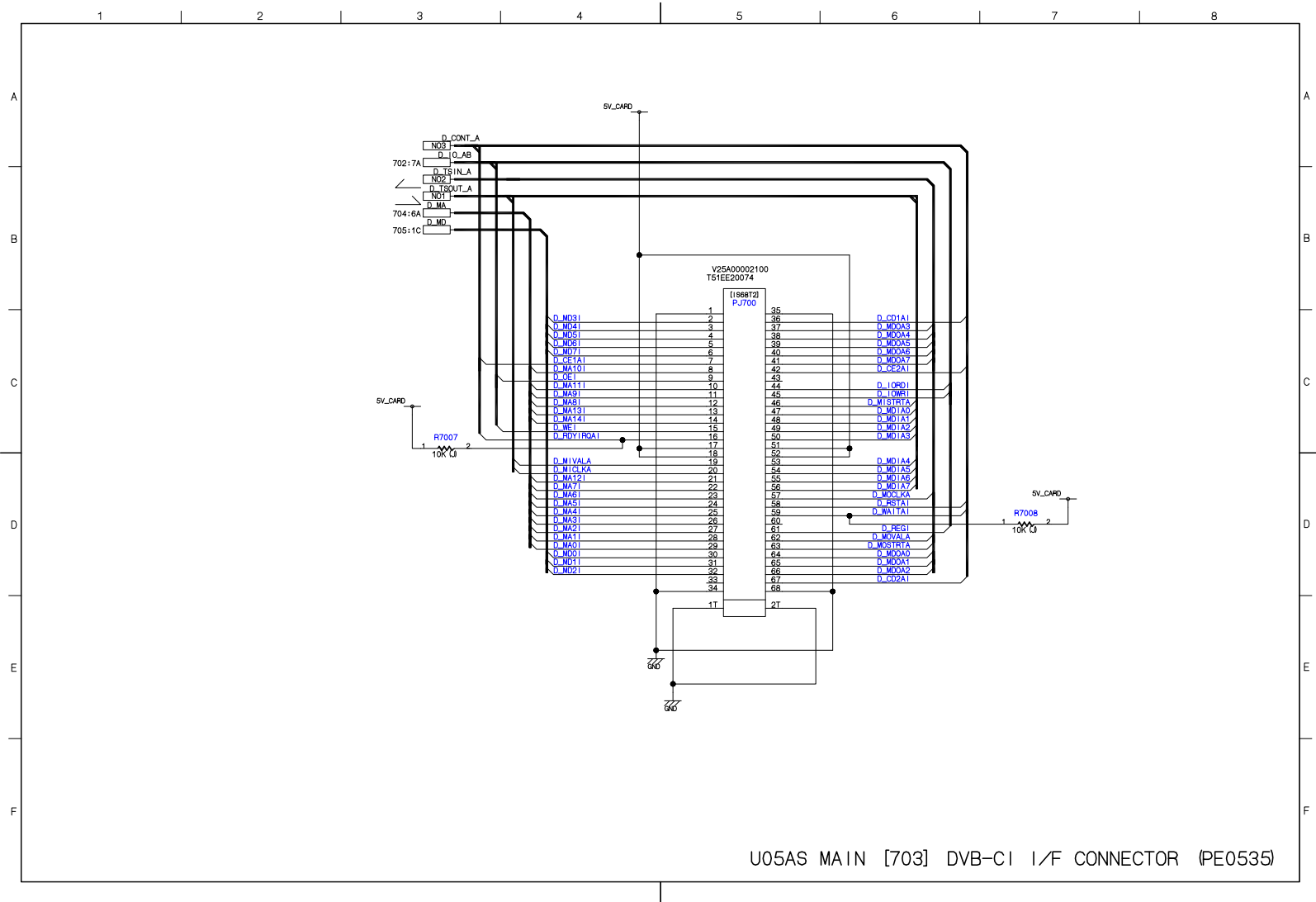


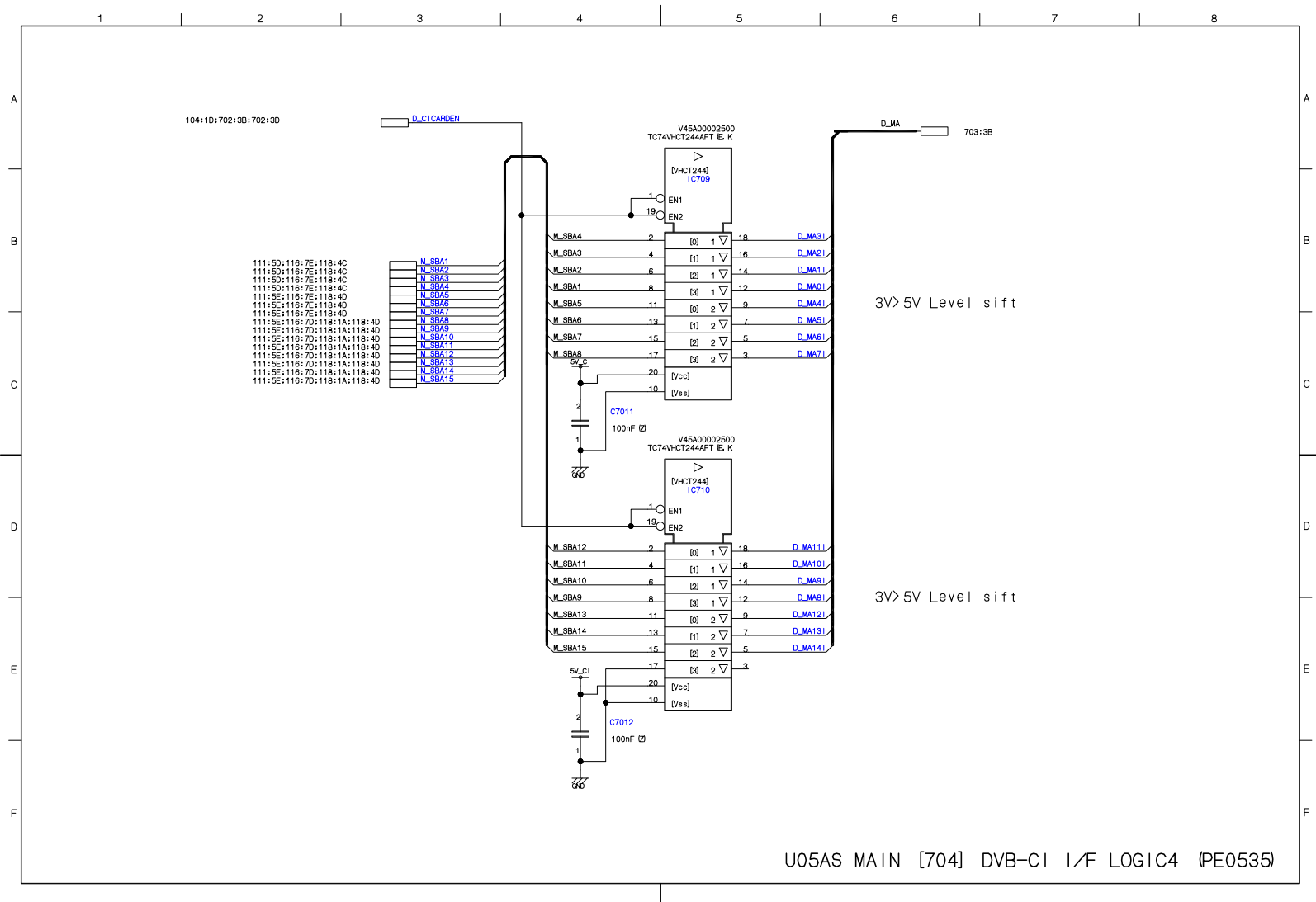


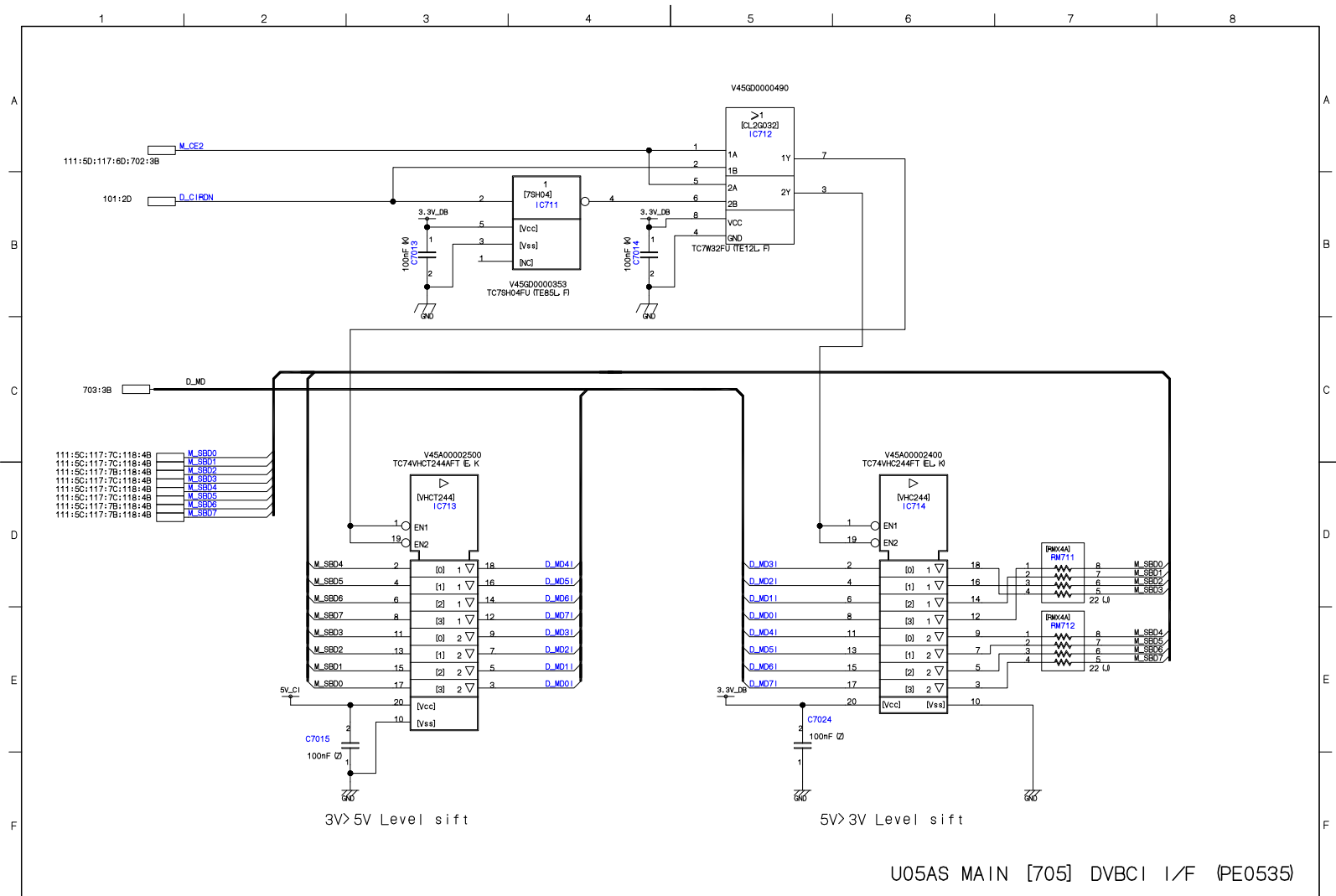


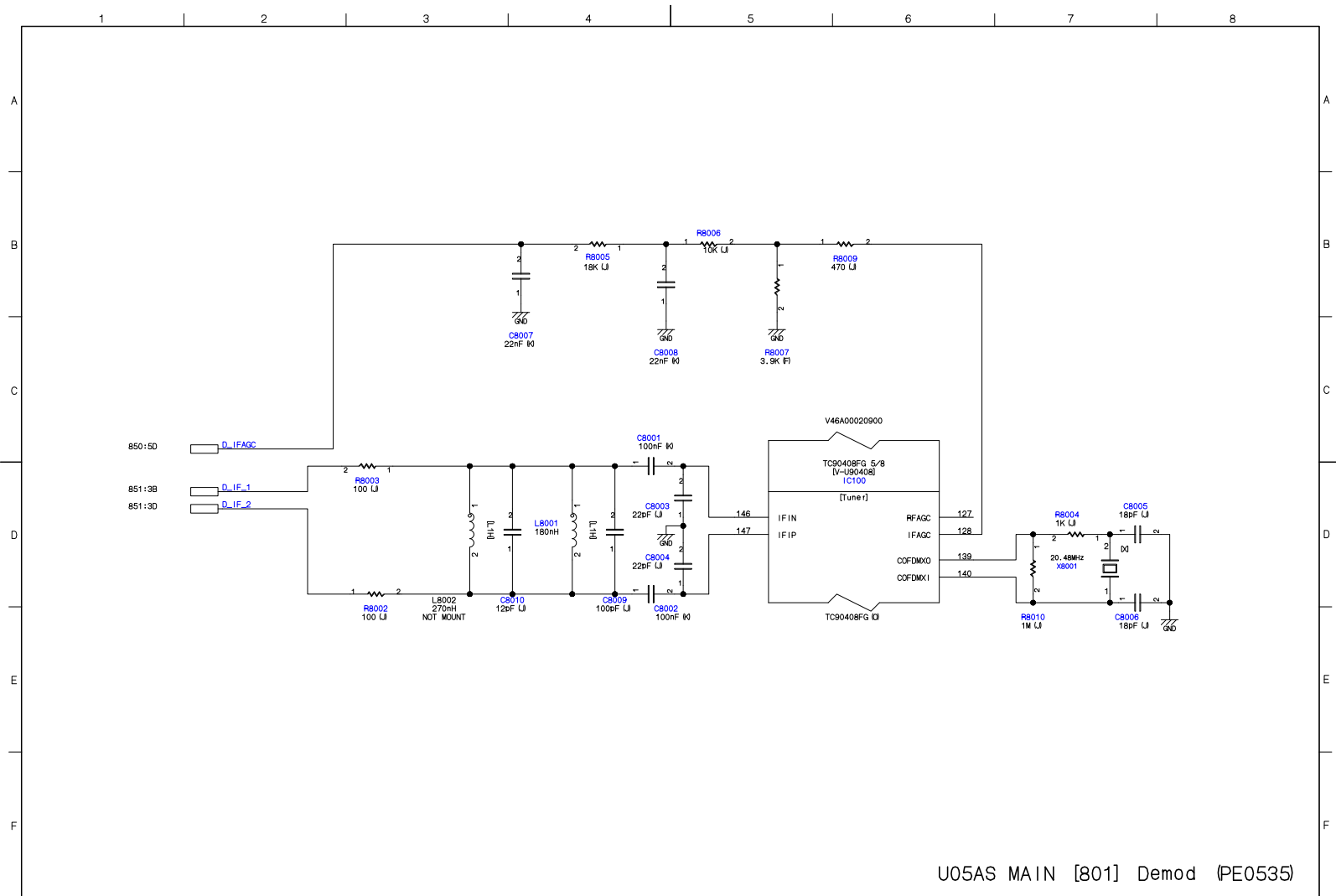


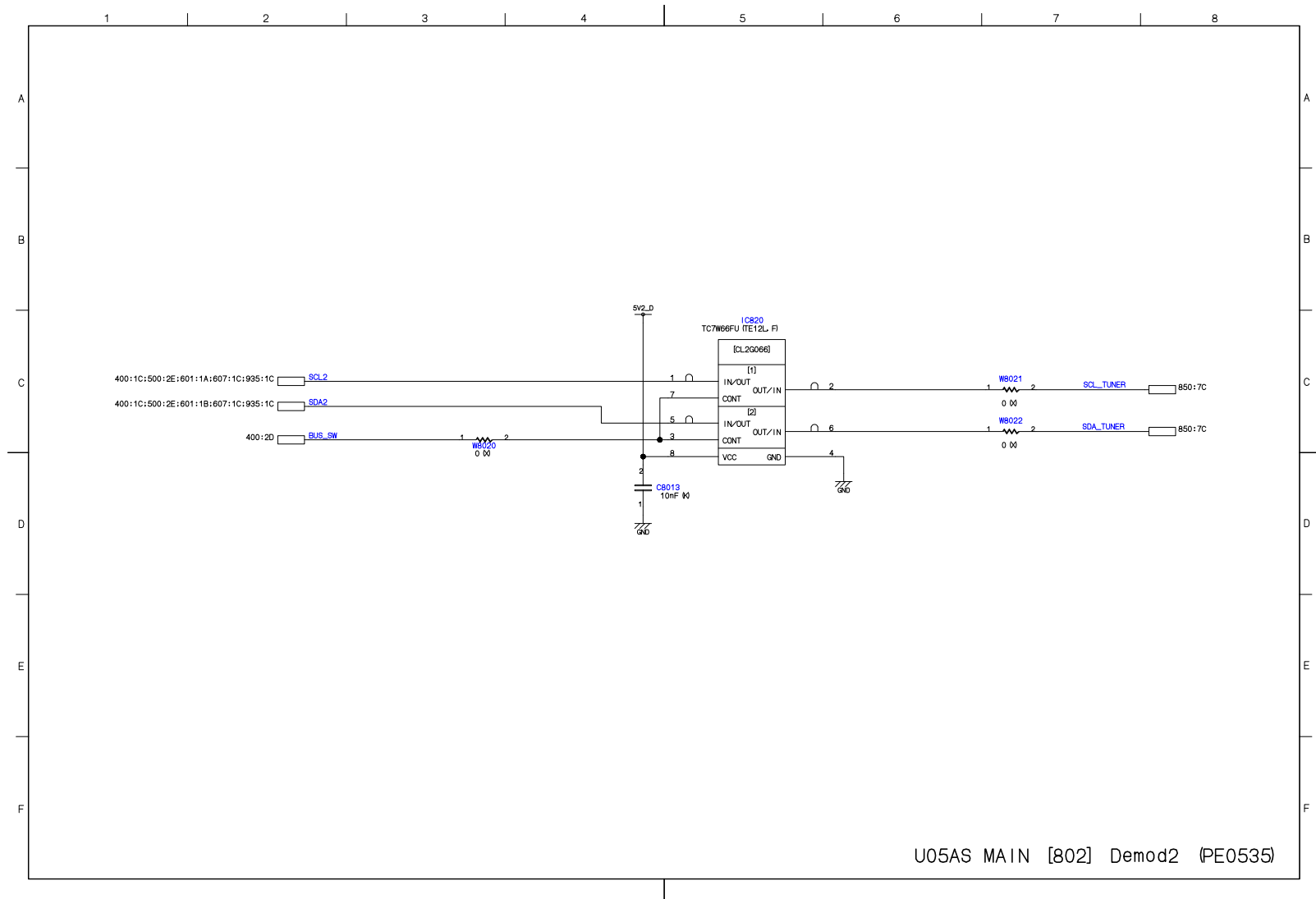


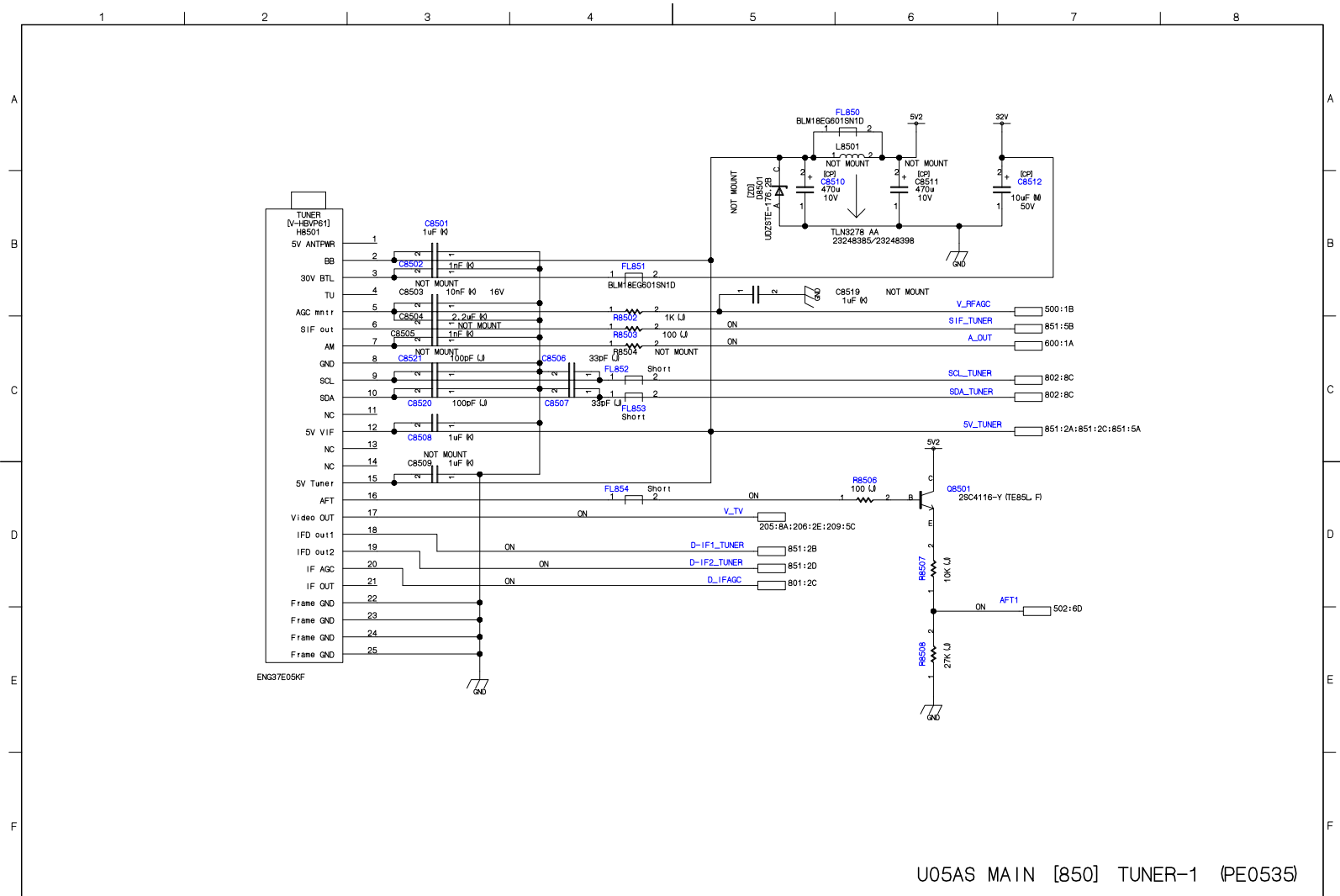


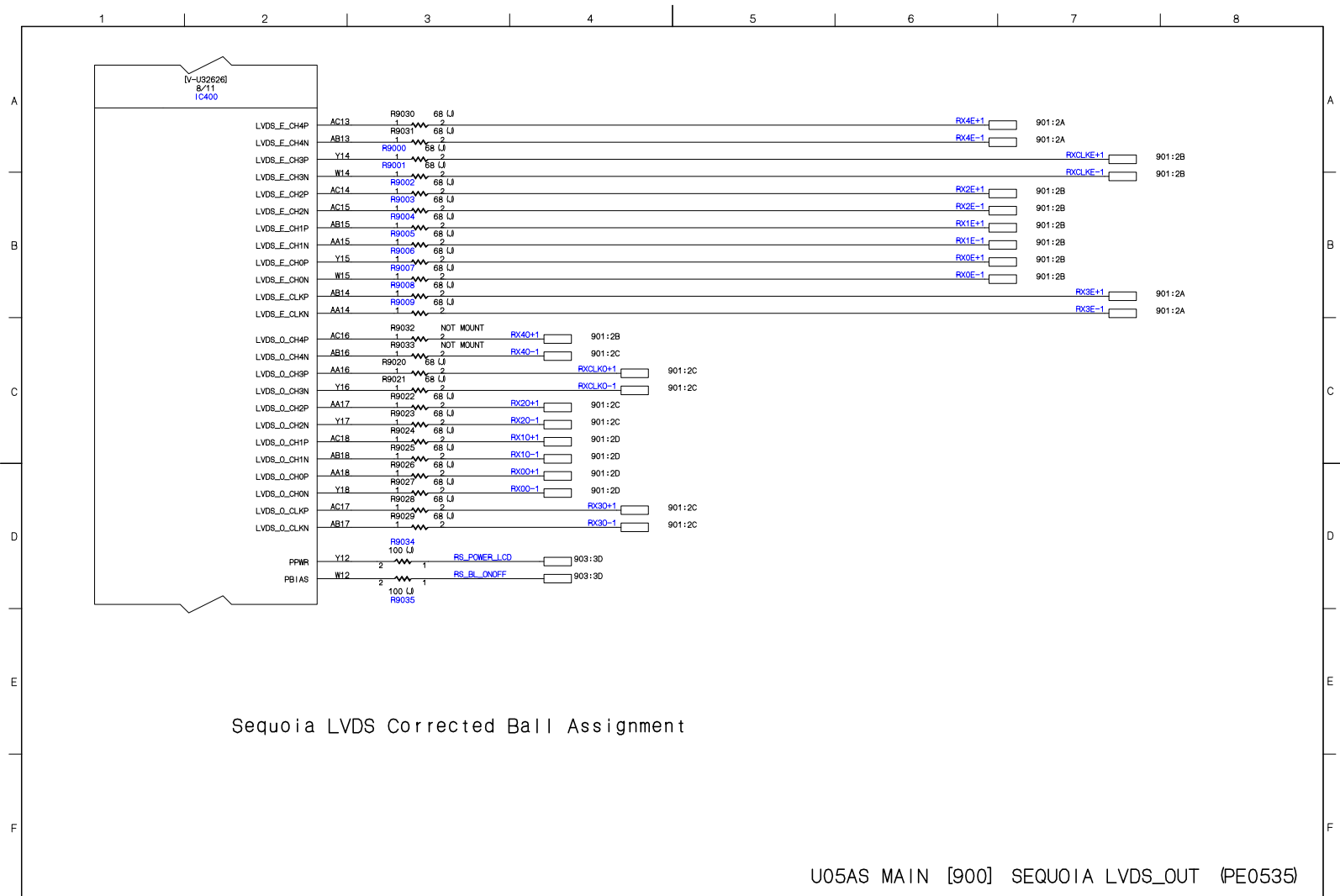


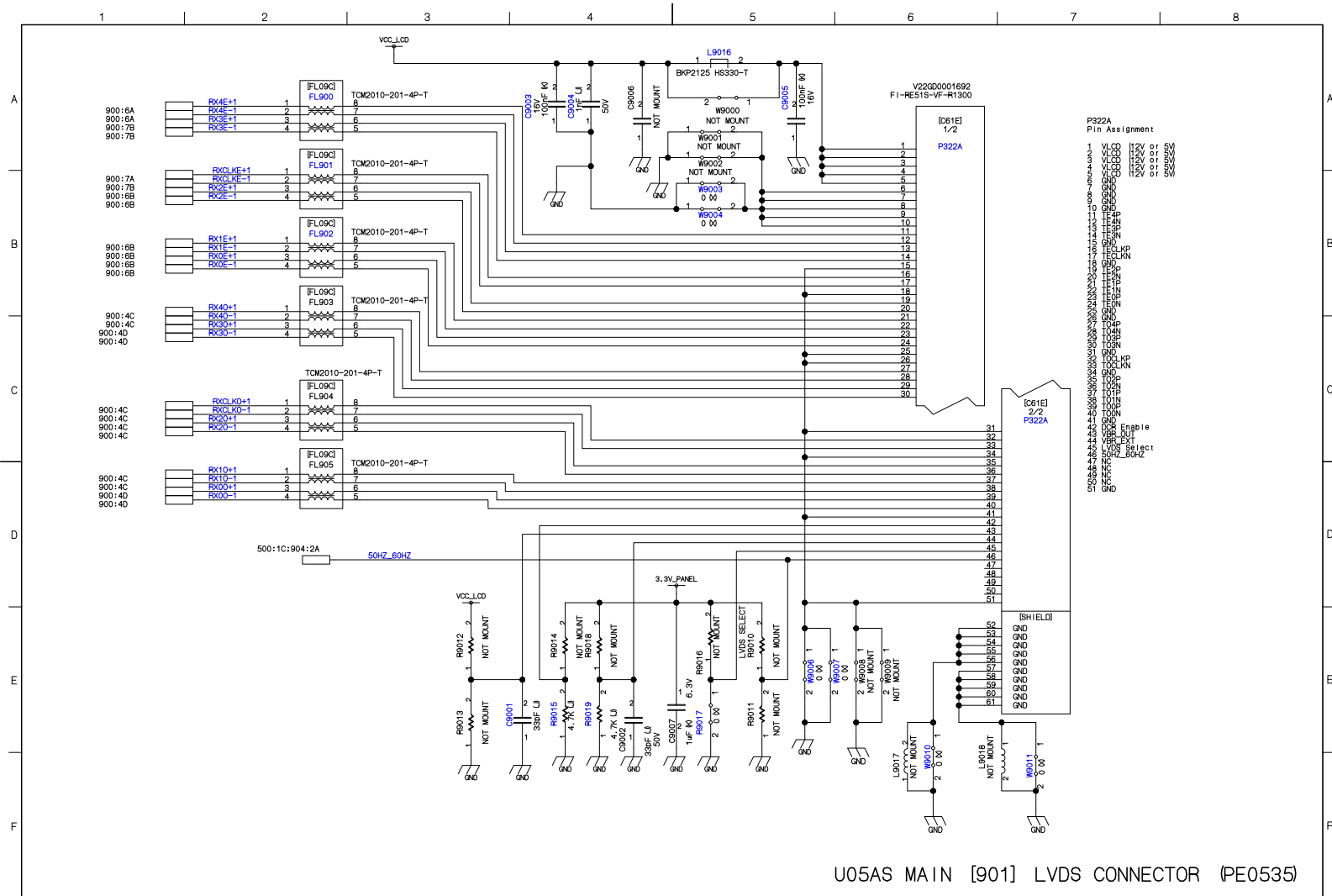


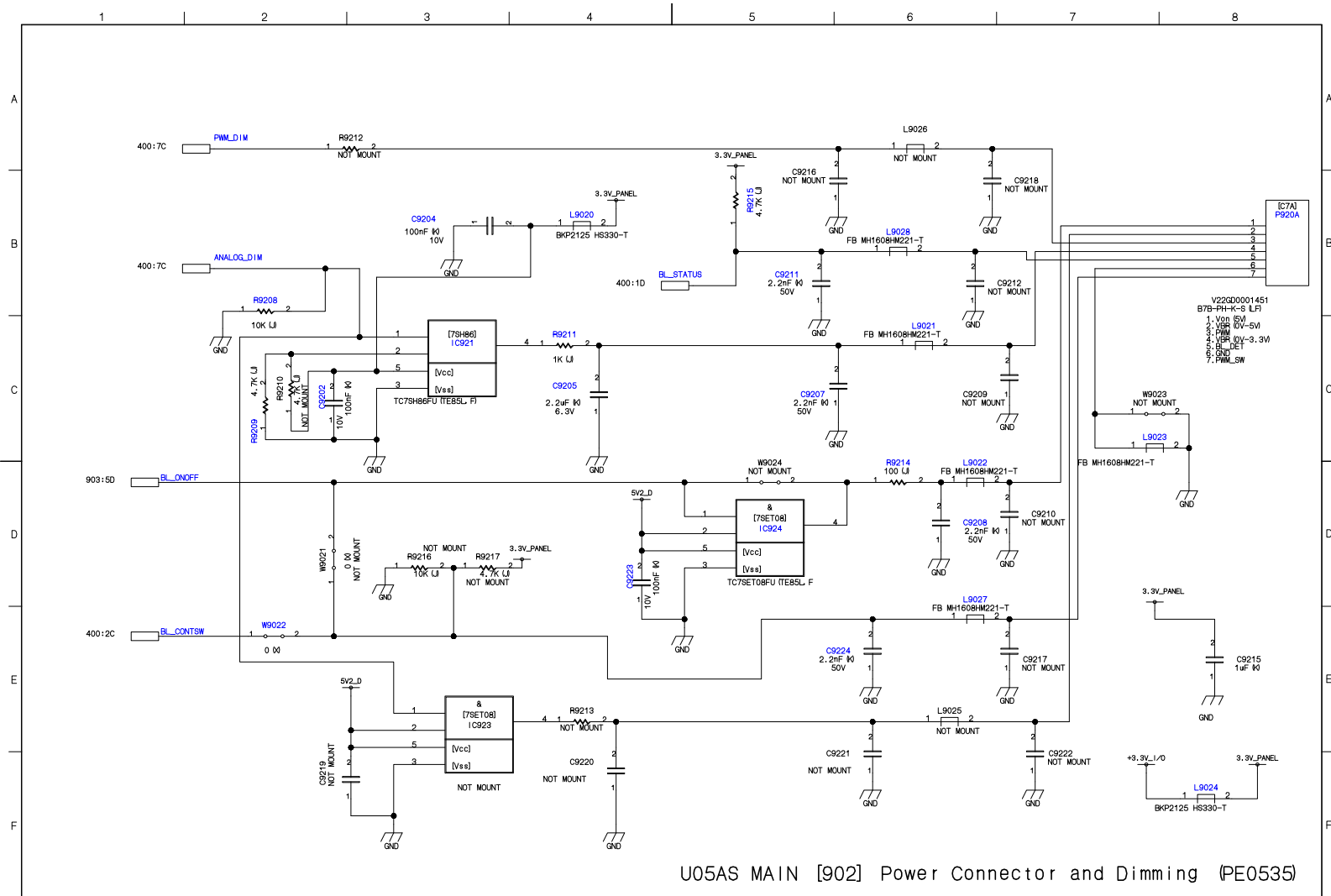












REM_100 で I/Oポート必要

CV505D / XV505D

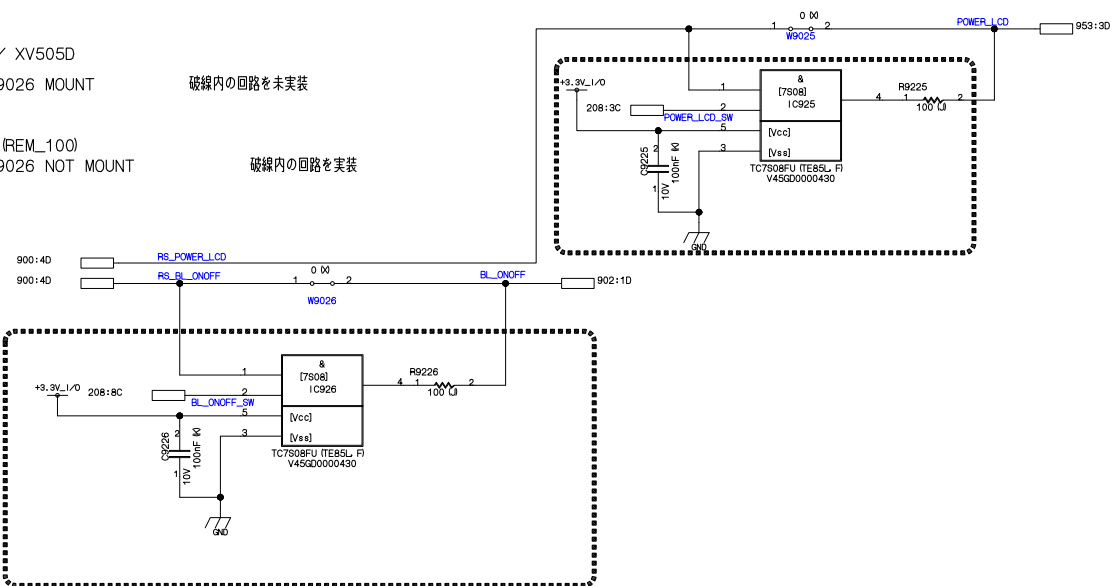
W9025, W9026 MOUNT

破線内の回路を未実装

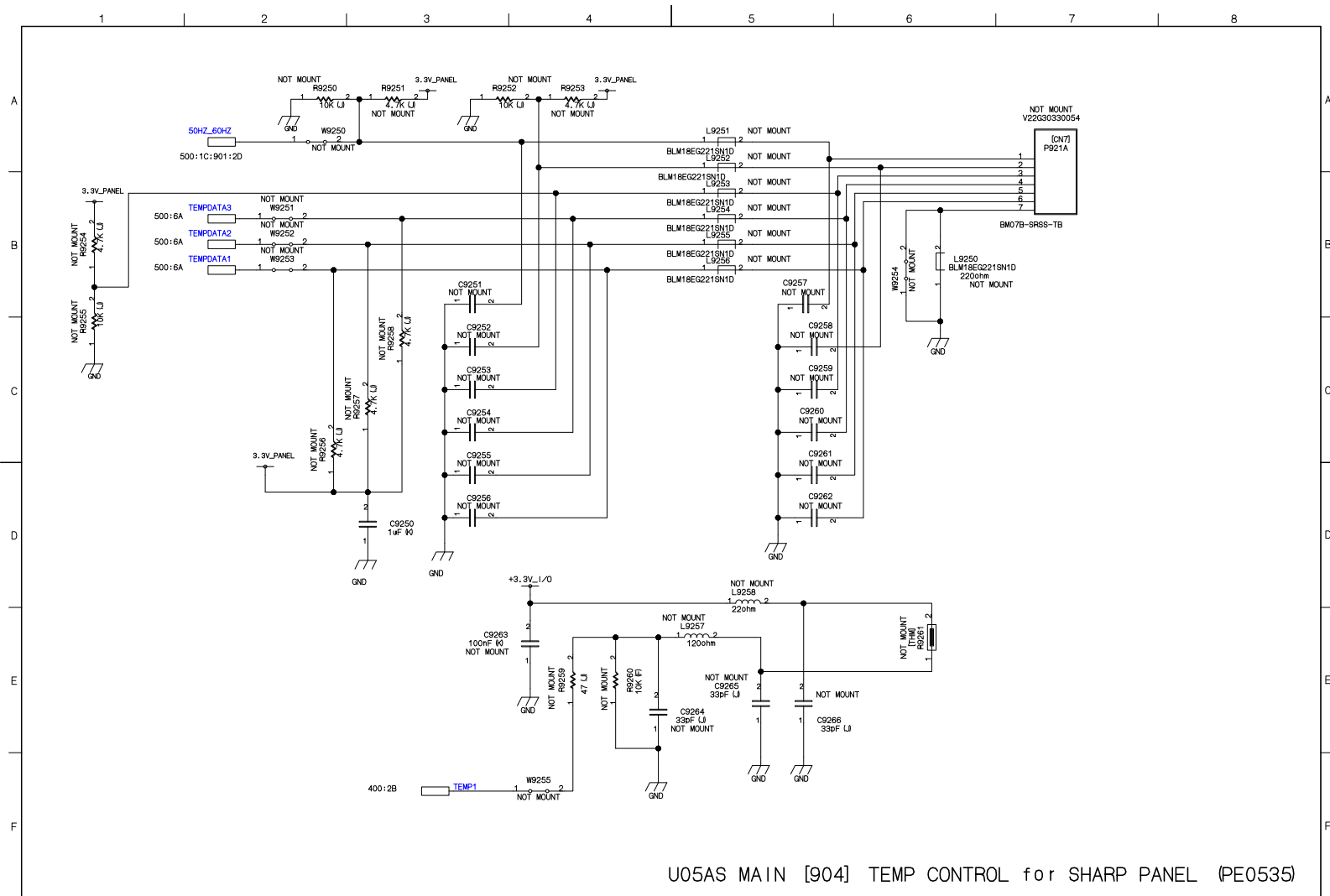
RV505D (REM_100)

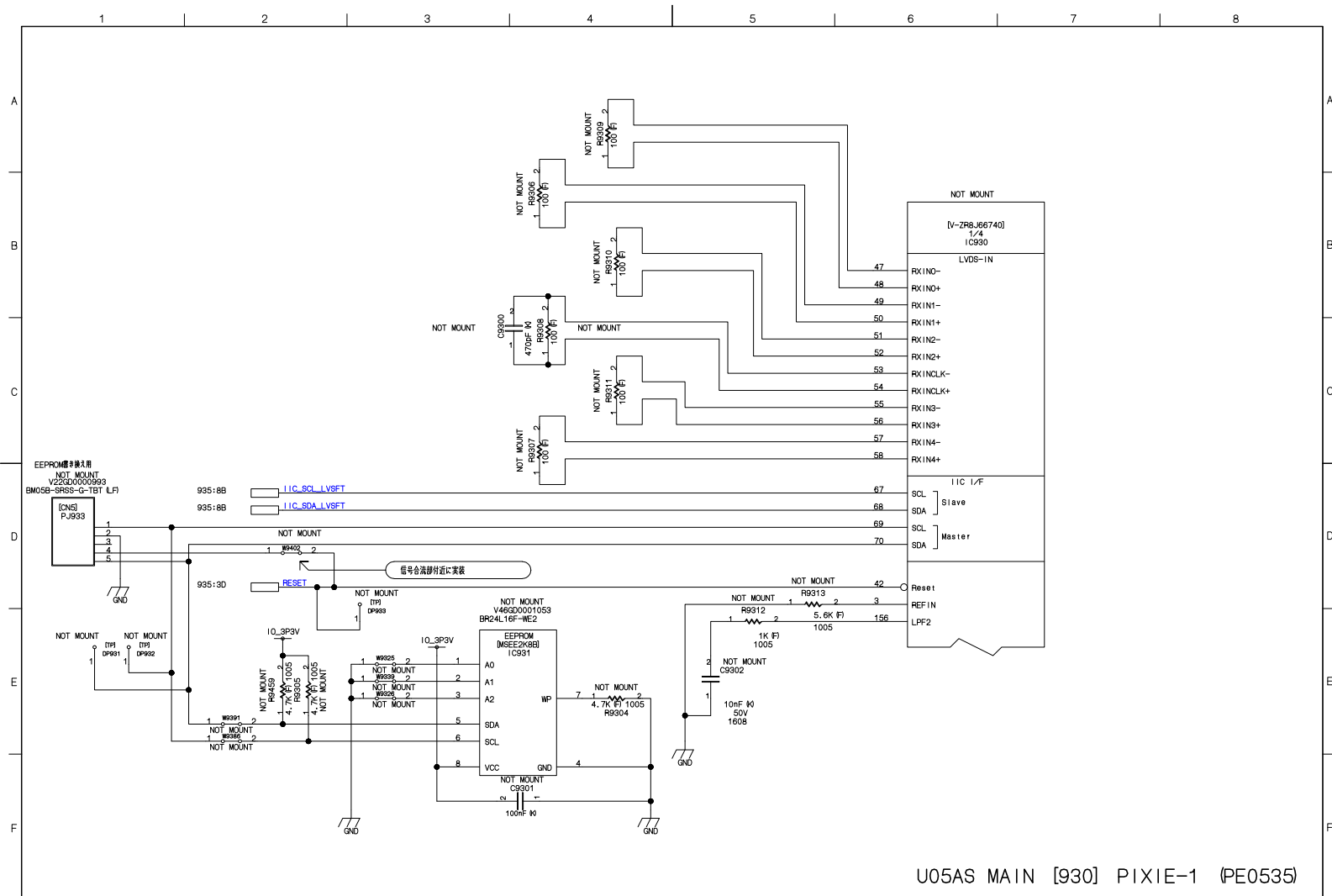
W9025, W9026 NOT MOUNT

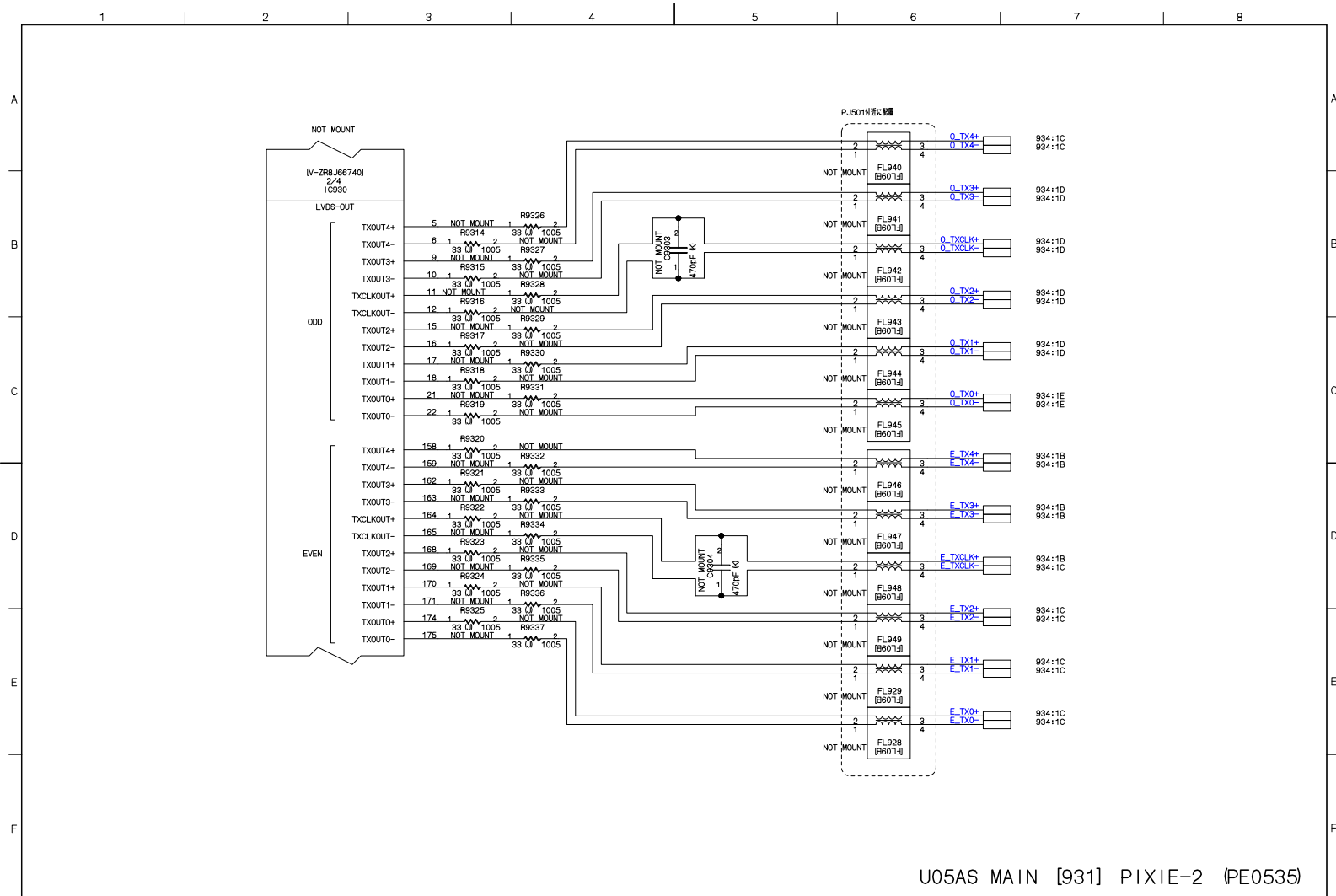
破線内の回路を実装

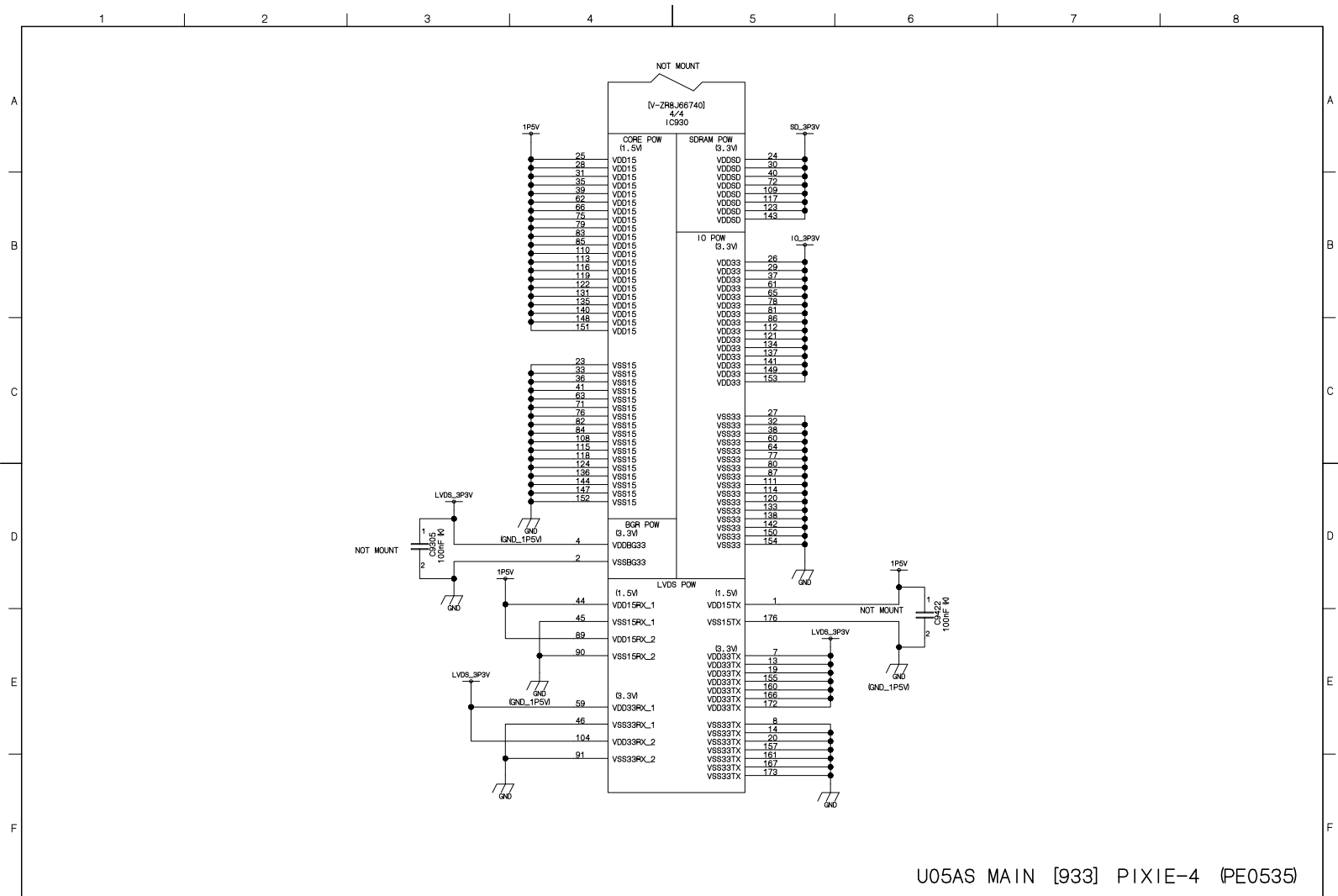


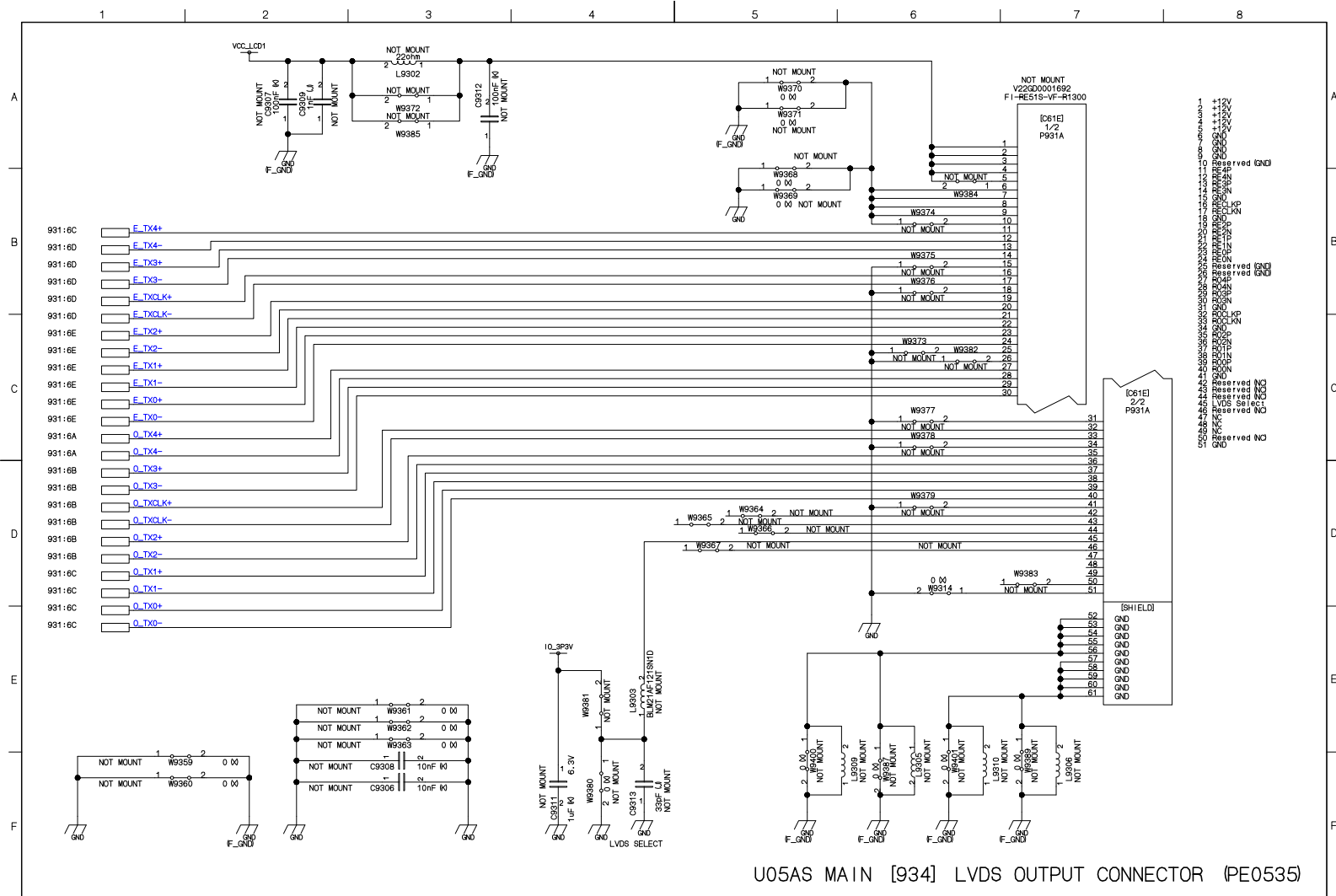
U05AS MAIN [903] POWER_LCD & BL_ONOFF (PE0535)

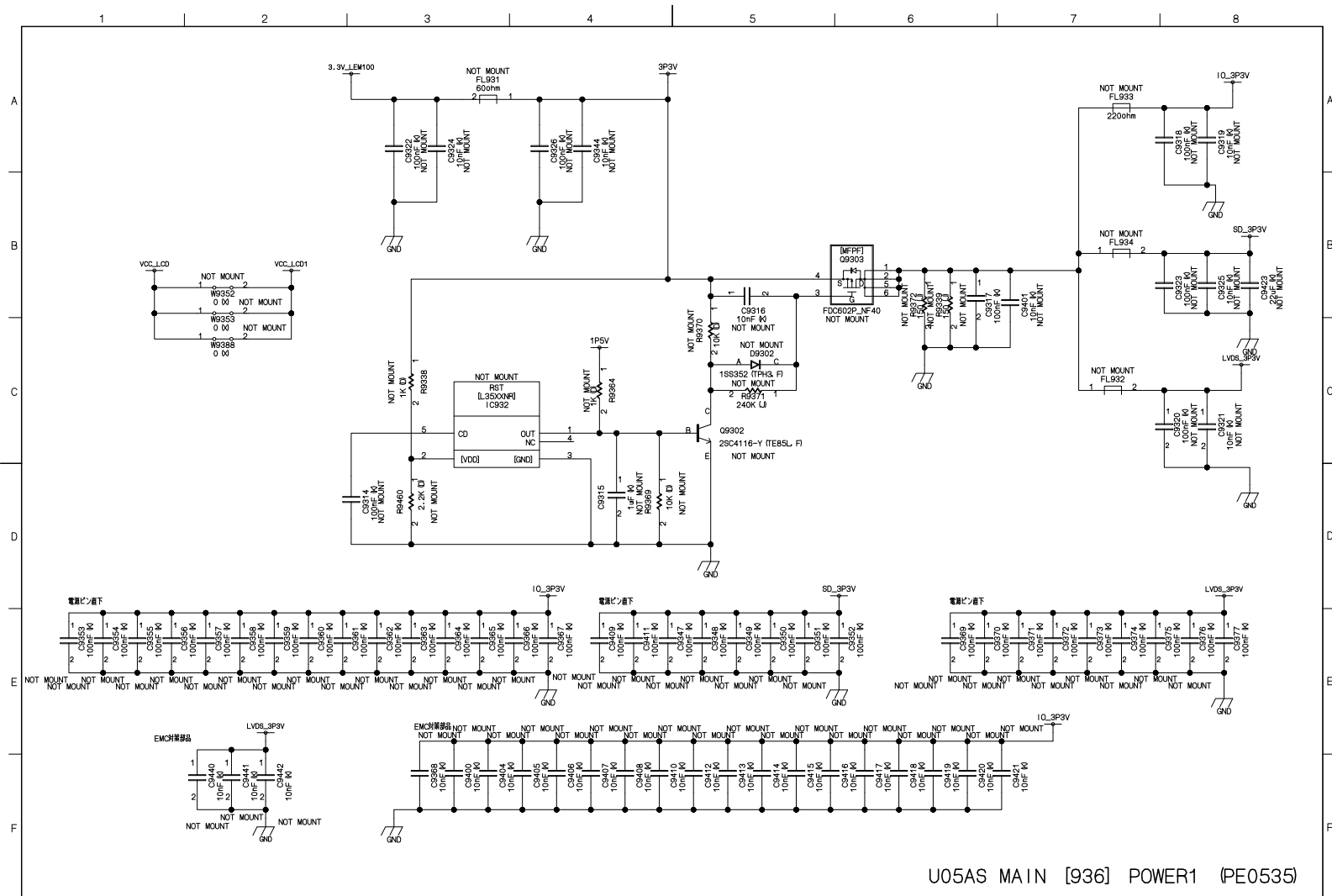


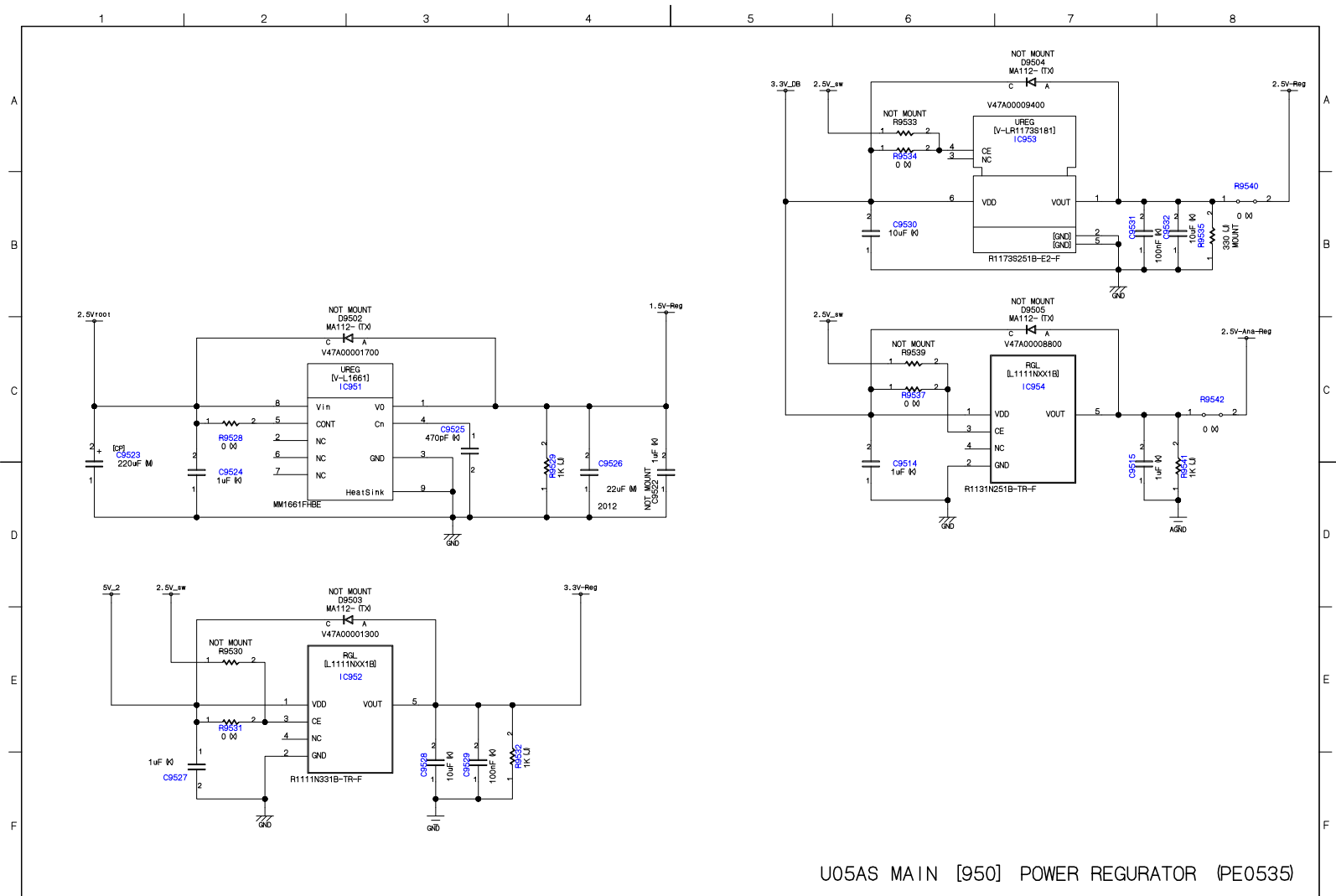


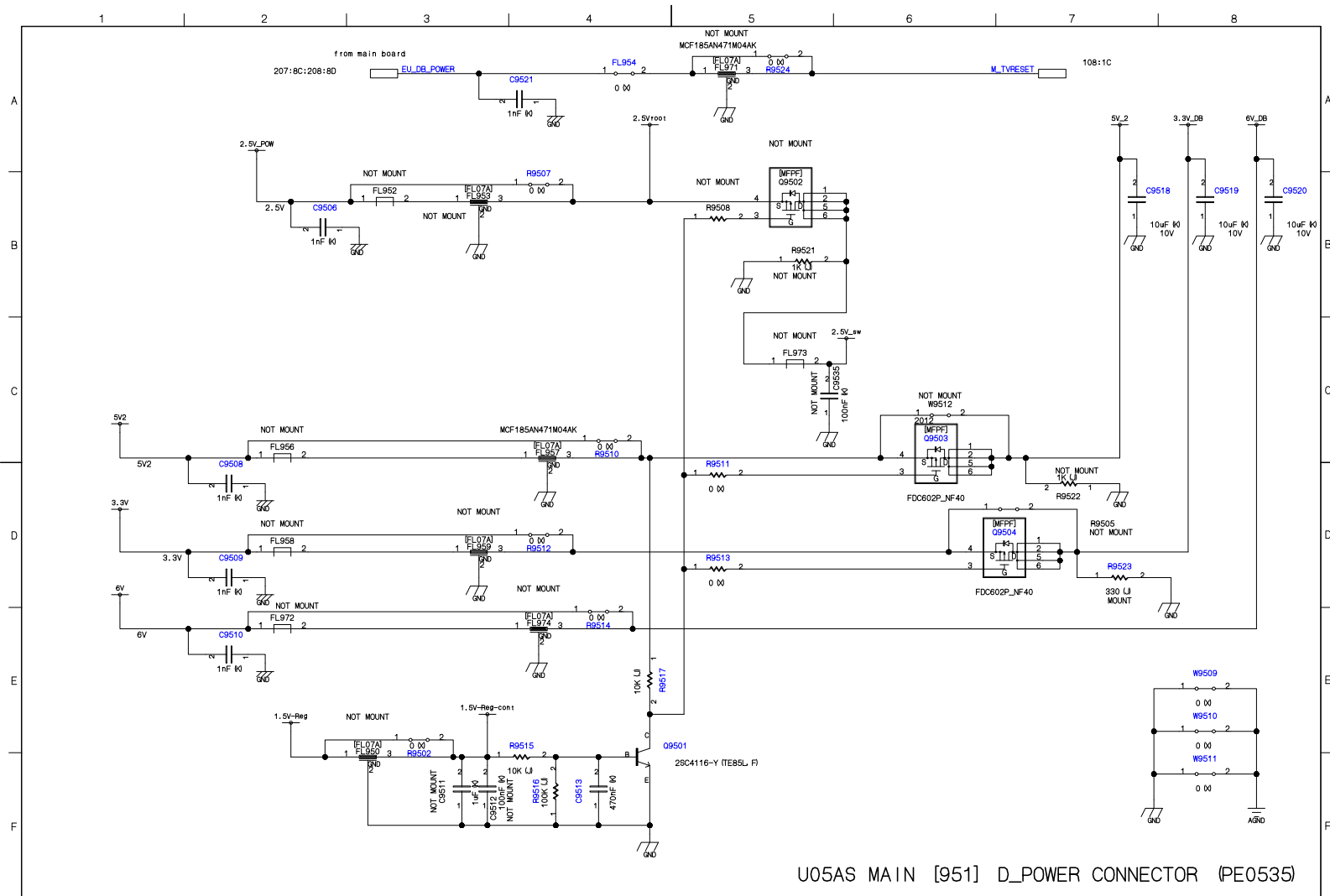


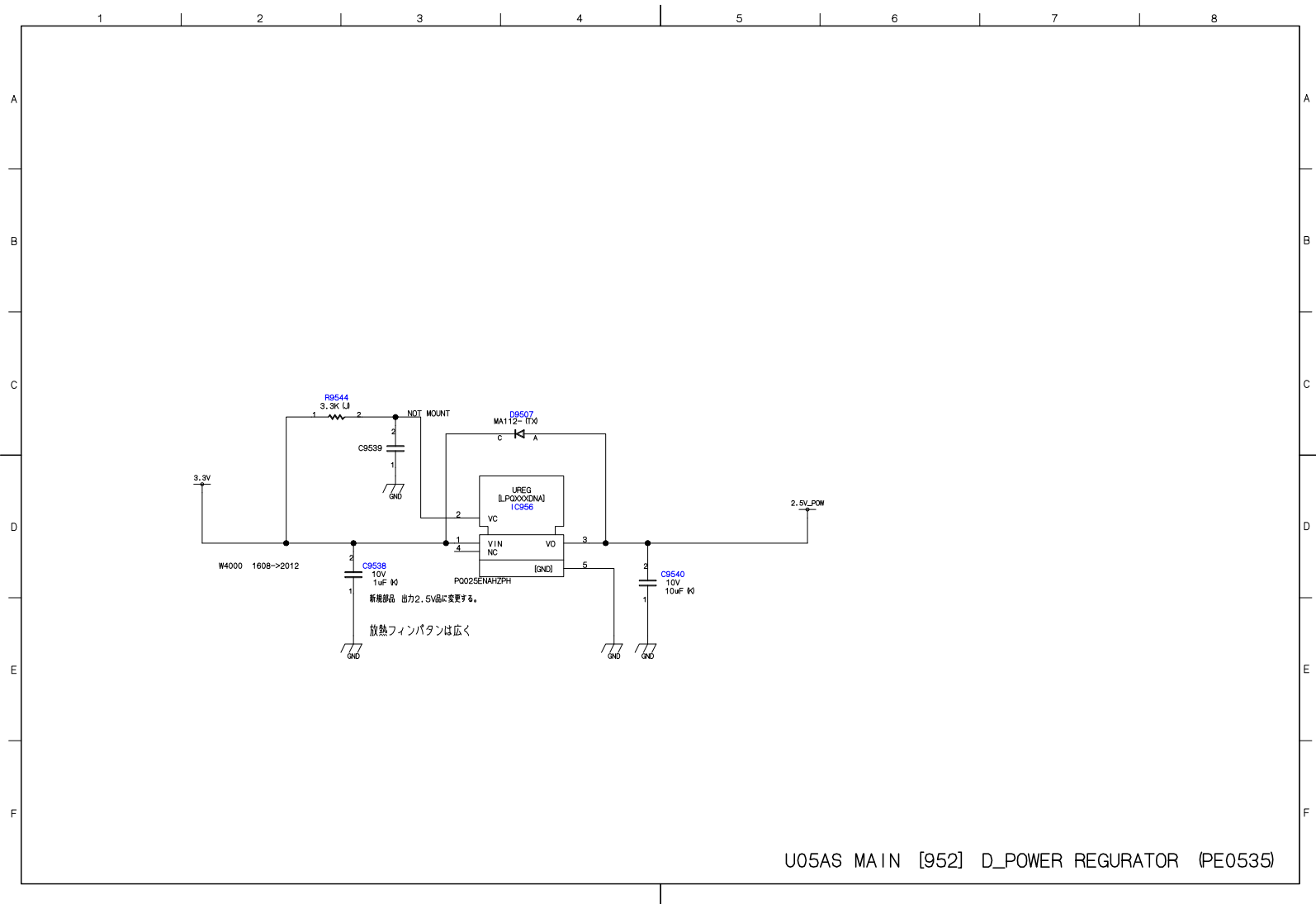


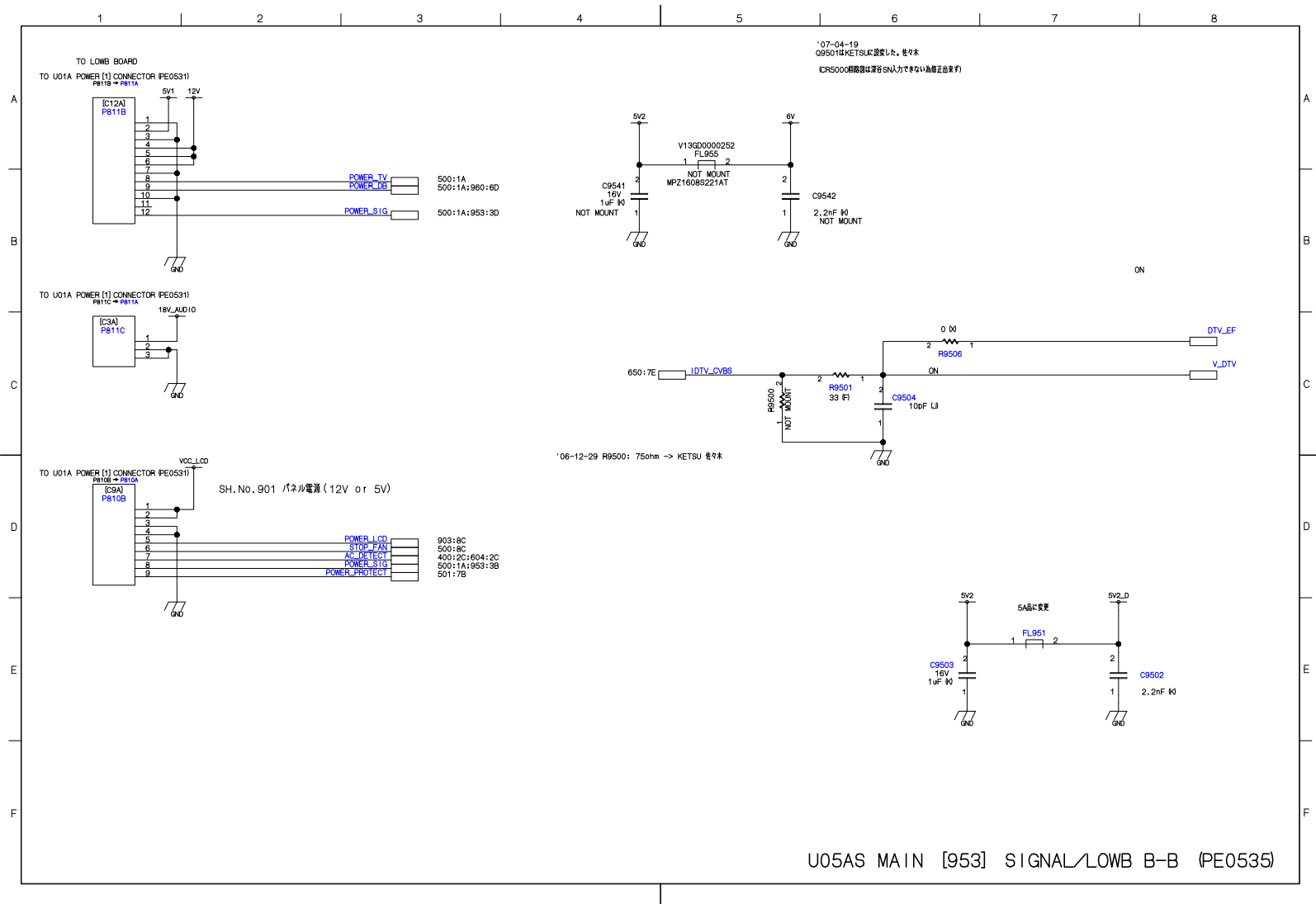


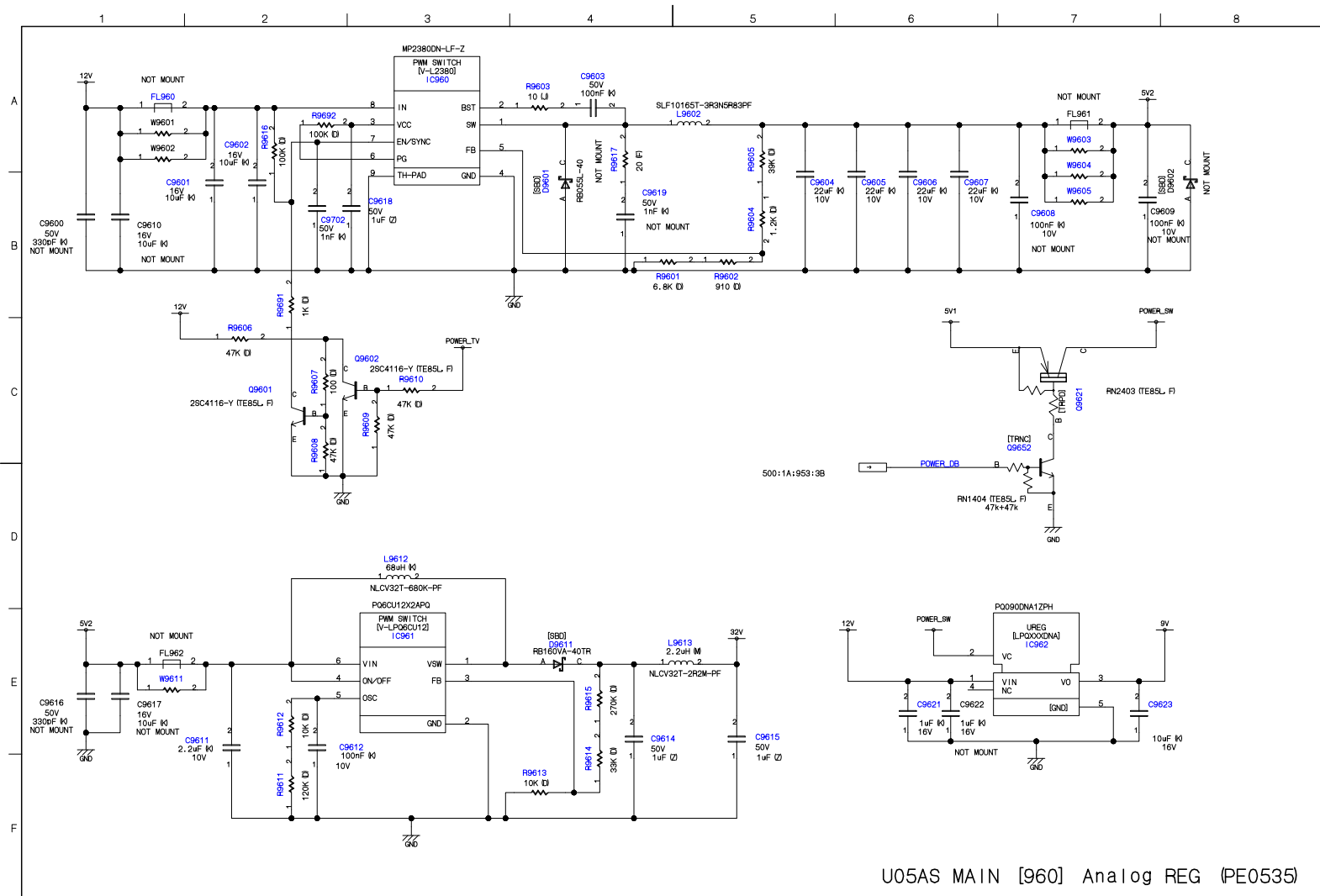


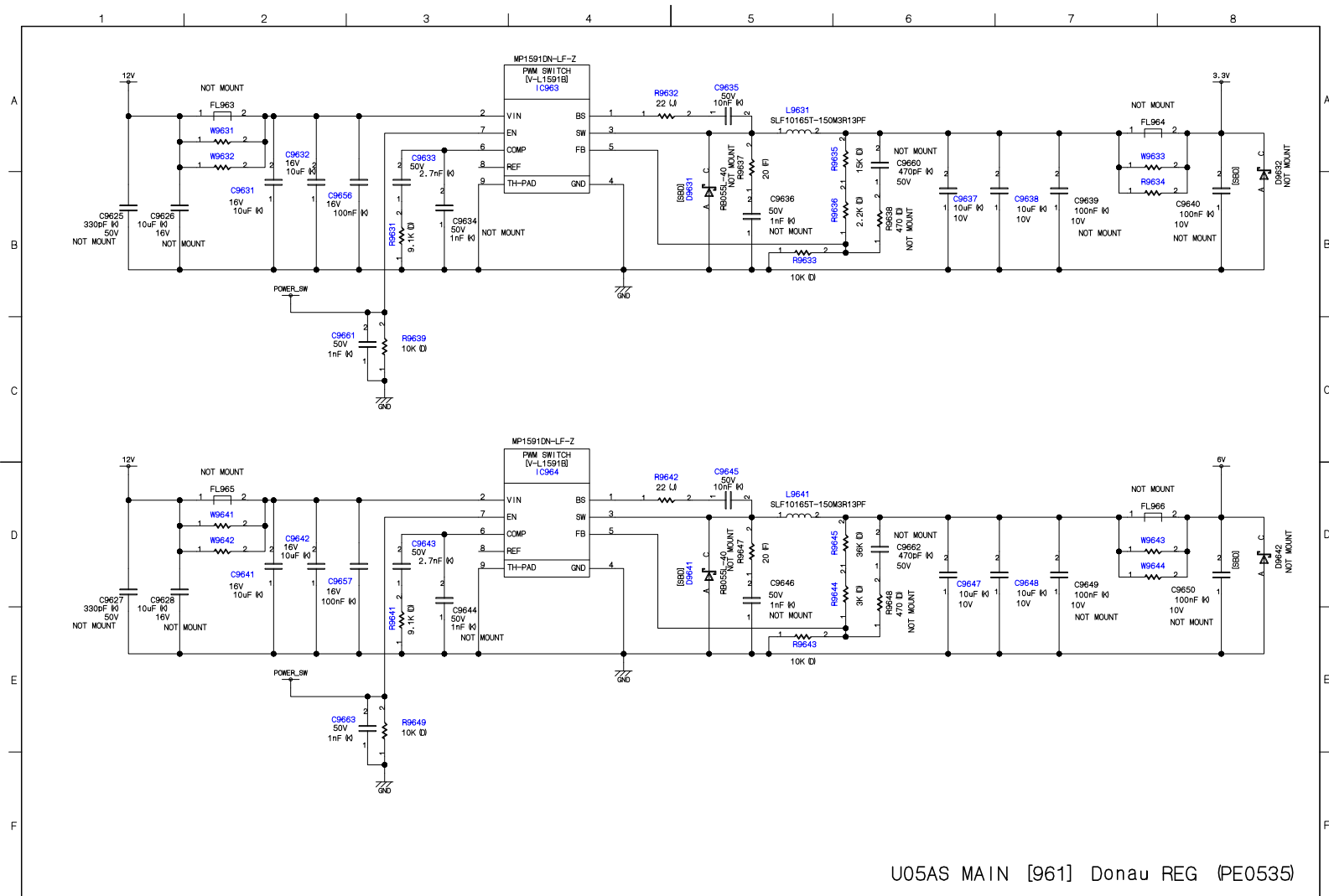


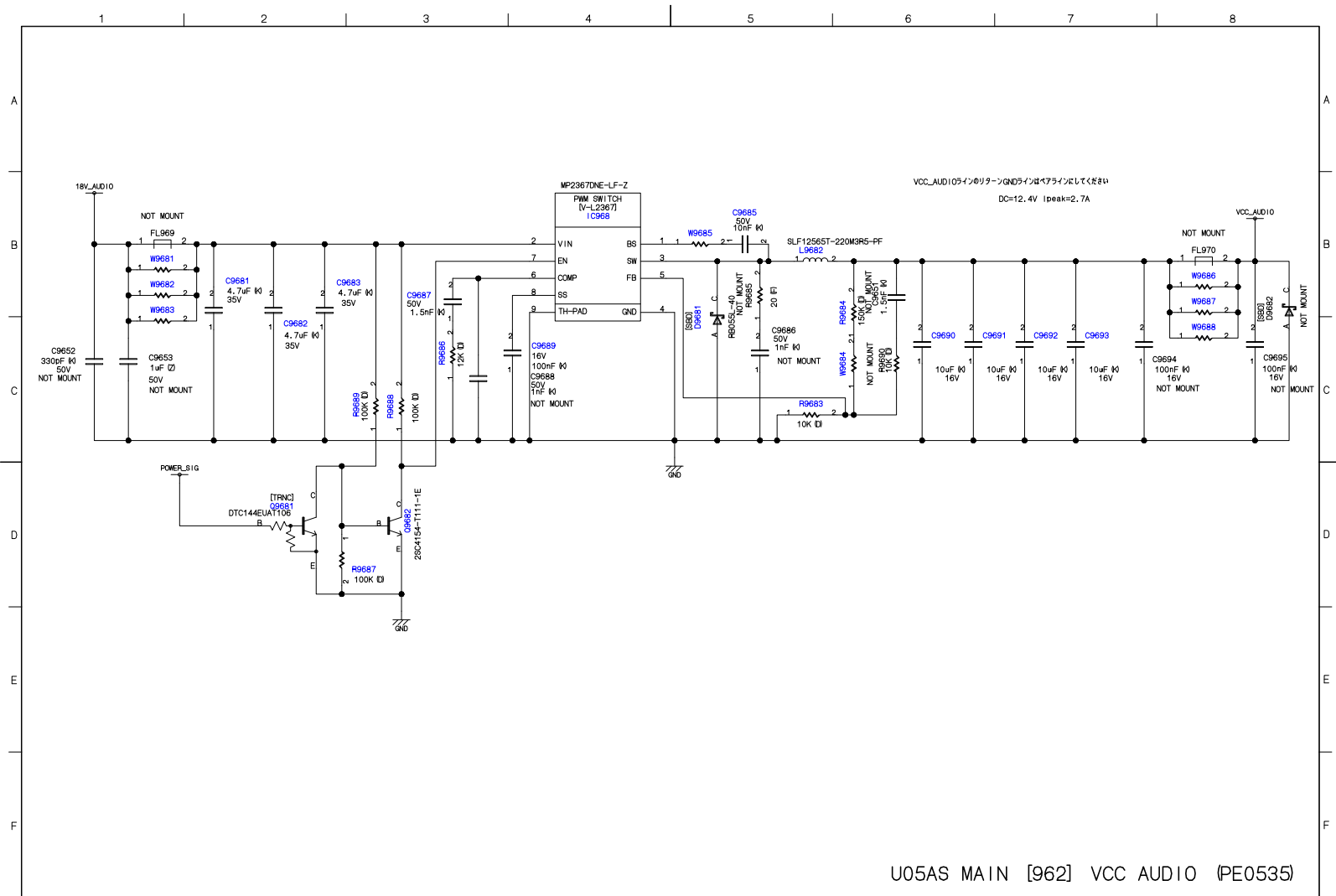


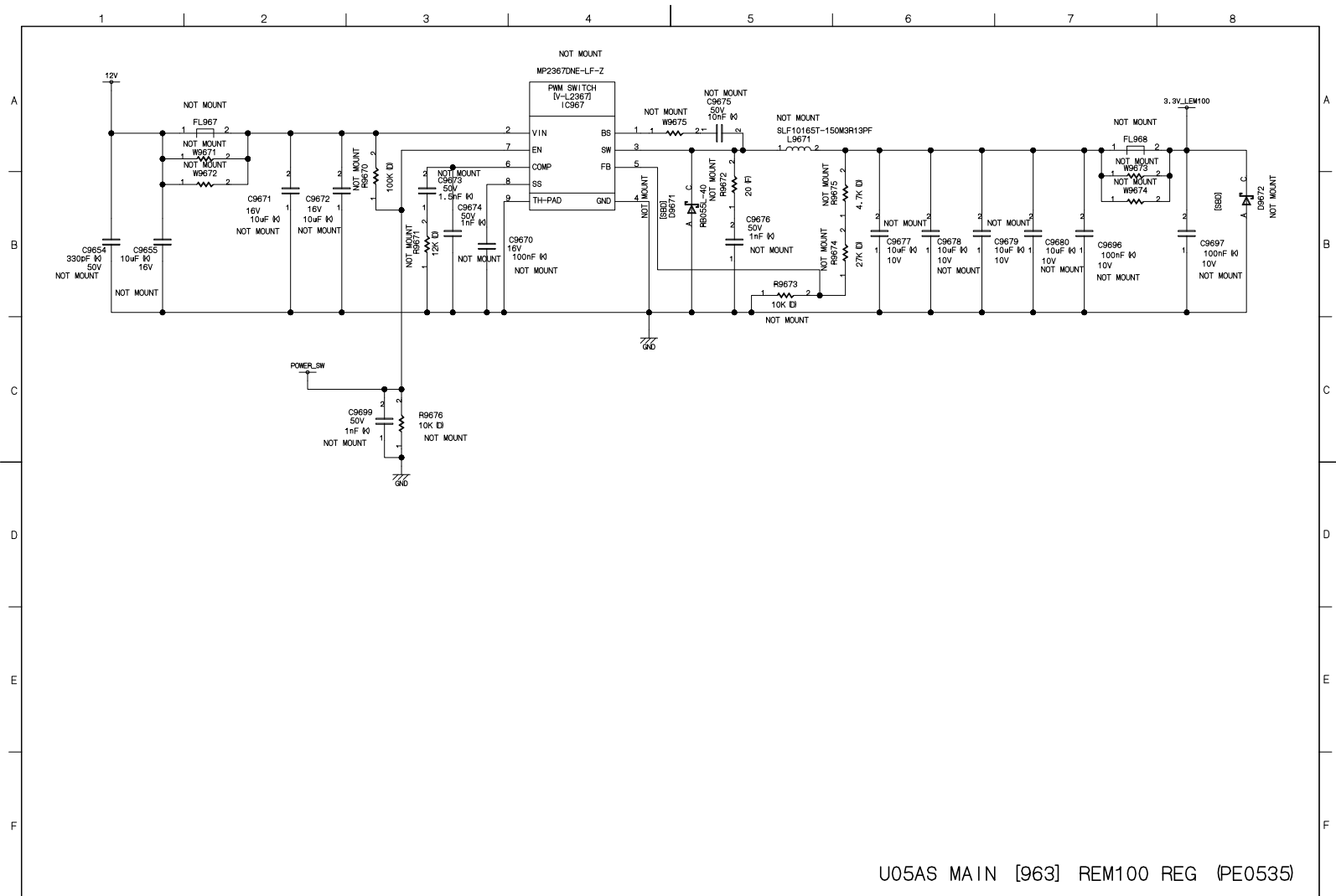


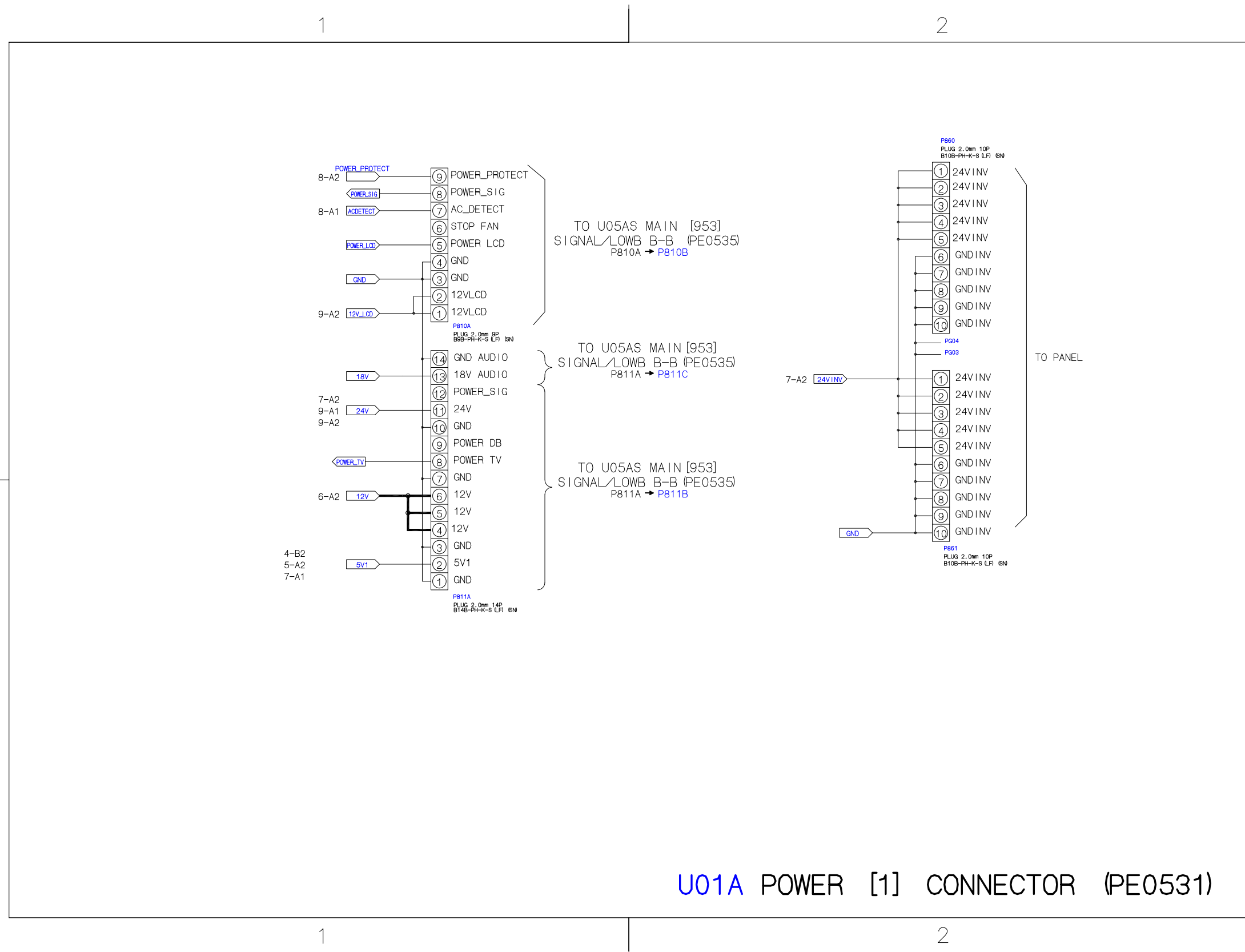




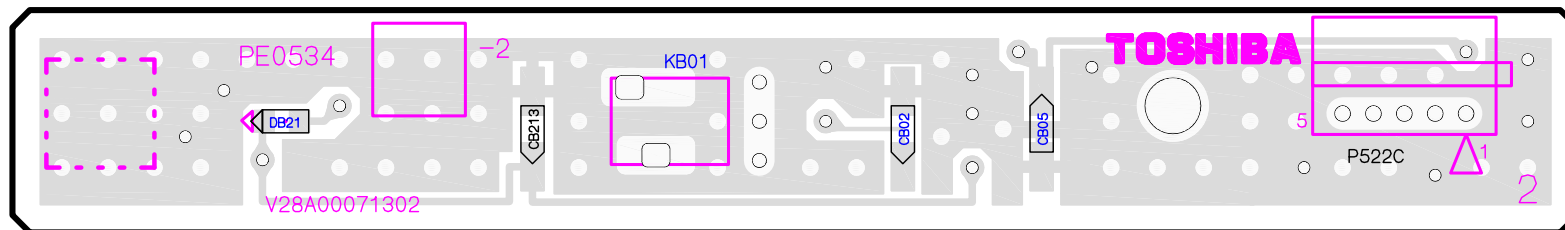




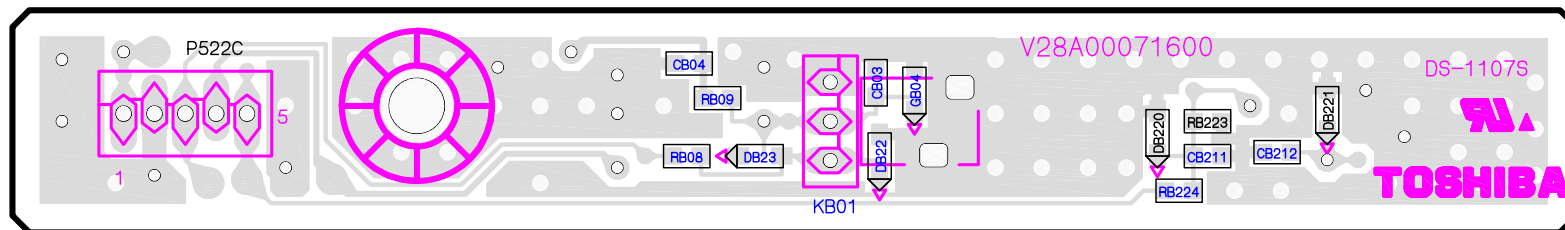




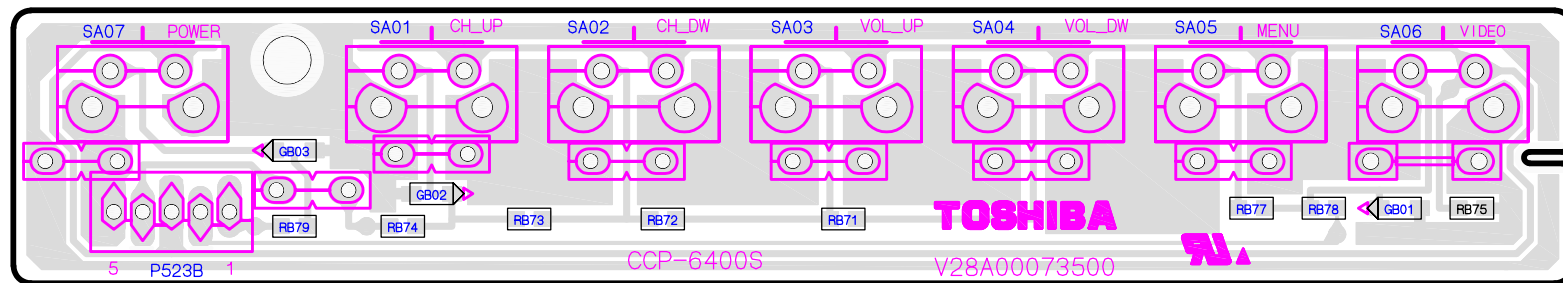
U04B RMT [Top] (PE0534)



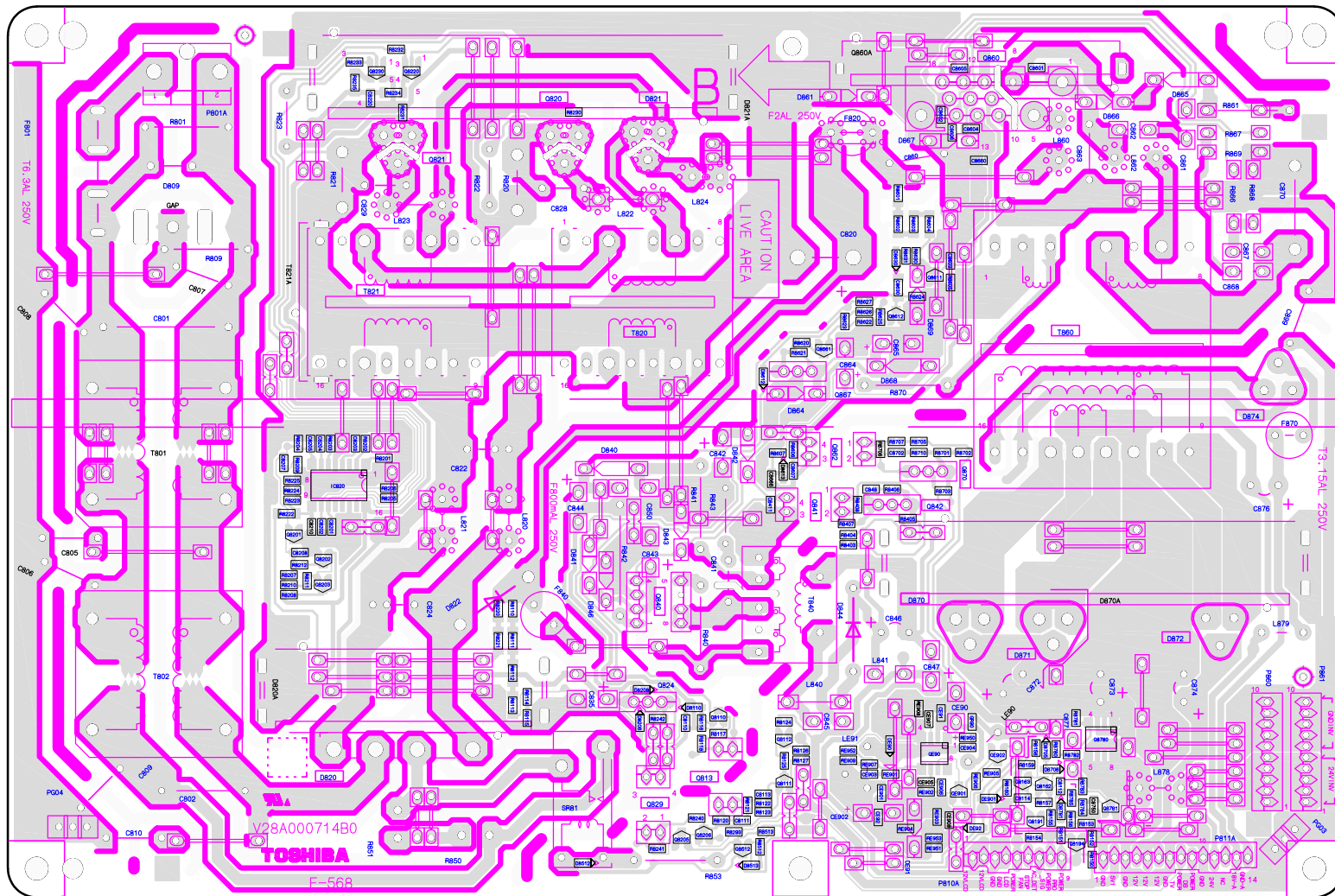
U04B RMT [Bottom] (PE0534)



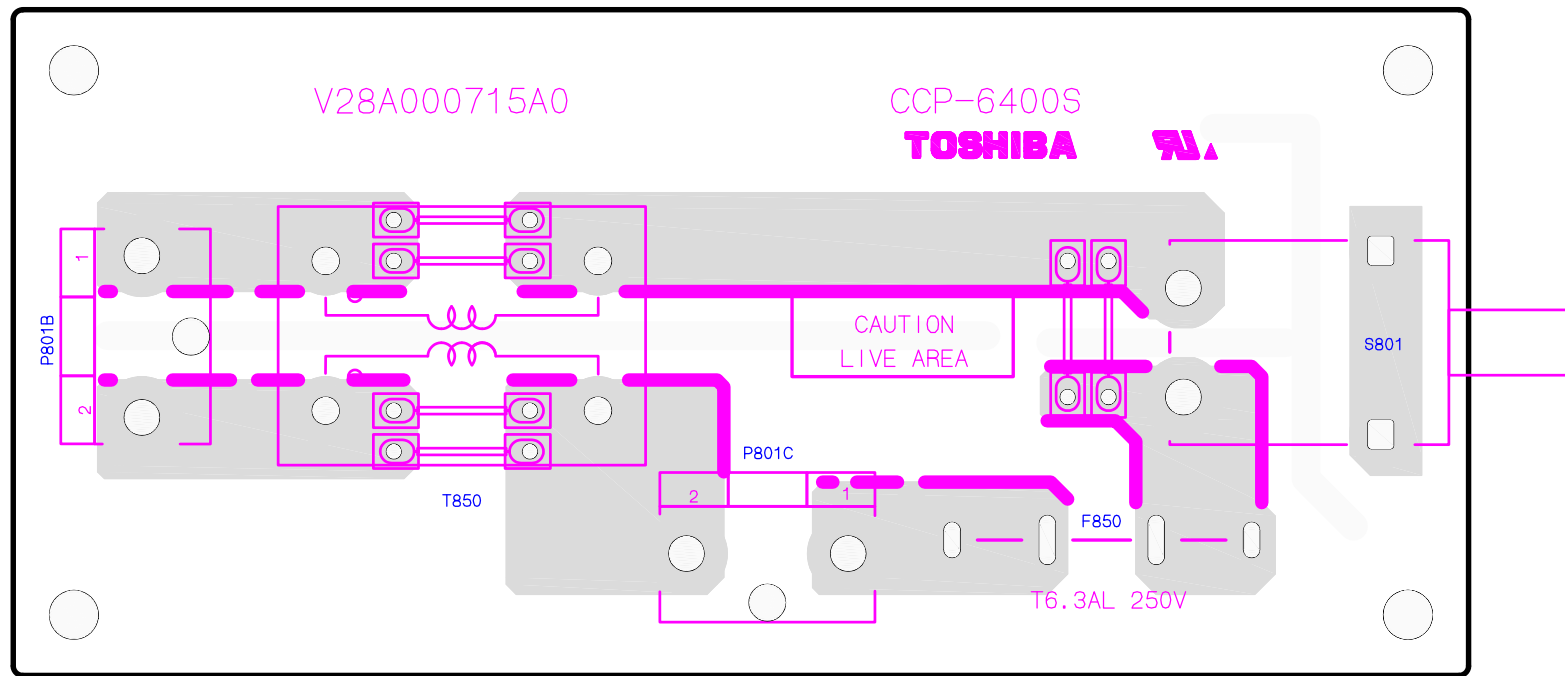
U06A KEY [Bottom] (PE0560)



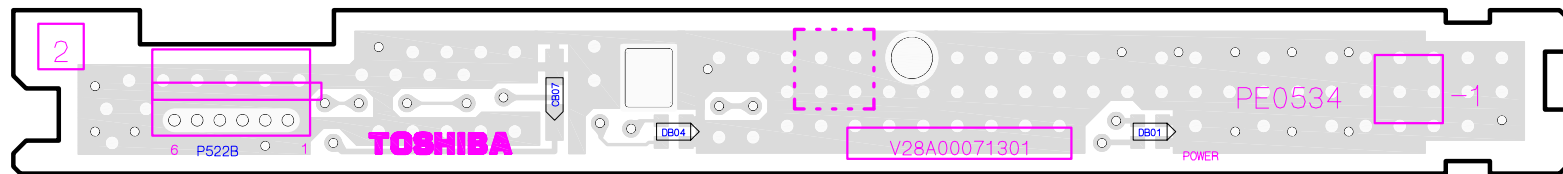
U01A POWER [Bottom] (PE0531)



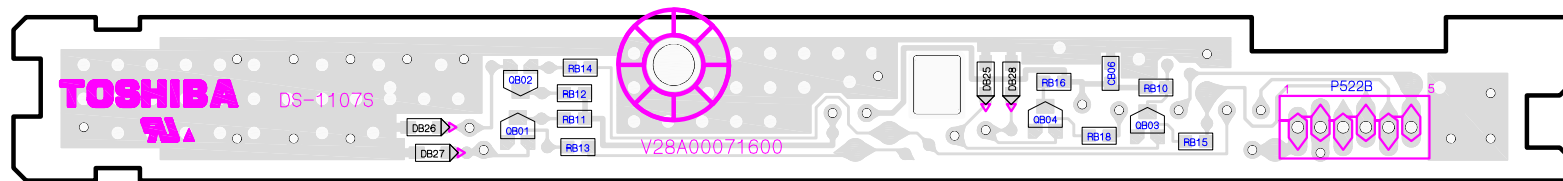
U03A AC-SW [Bottom] (PE0533)



U04A LED [Top] (PE0534)



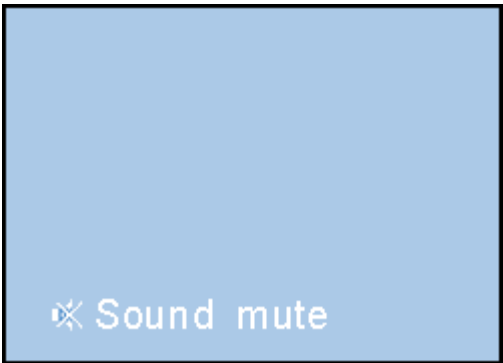
U04A LED [Bottom] (PE0534)



ADJUSTMENT

Service Mode

Entering to Service Mode



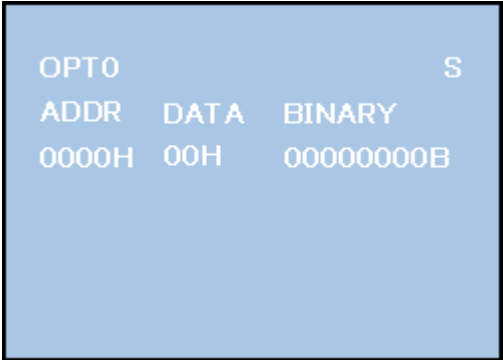
1. Set VOLUME to minimum and press  button once on remote control.



2. Press  button again and hold button down.



Service Mode display

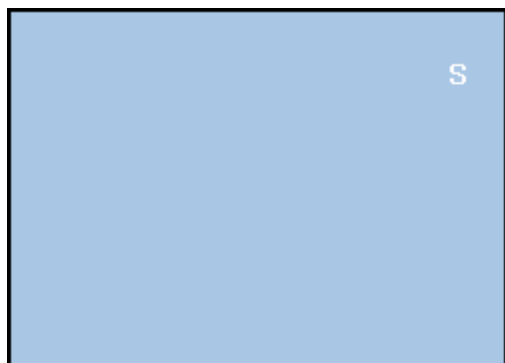


3. While holding the  button, press MENU button on TV set.

Displaying the Adjustment Menu

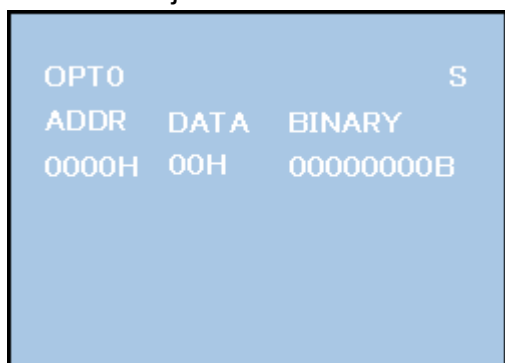
Press MENU button on TV.

Service Mode



Press ↑ ↓ Press

Adjustment Mode



Key Function in the Service Mode

The following key entry during display of adjustment menu provides special functions.

CAUTION: Never try to perform initialization unless you have changed the memory IC.

	 button (on remote control)
--	--

Test signal selection	
Selection of the adjustment items	CH ▲/▼ (on TV or remote control)
Change of the data value	Volume ▲ +/- (on TV or remote control)
Adjustment menu mode ON/OFF	MENU button (on TV)
Initialization of the memory (QA02)	CALL + CH ▲ button on TV
Reset the count of operating protect circuit to "00"	CALL + CH ▼ button on TV
Turn off I2C bus communication	CALL + Volume ▲ + button on TV
"RCUT" selection	1 button
"GCUT" selection	2 button
"BCUT" selection	3 button
"CNTX" selection	4 button
"COLC" selection	5 button
"UVTT" selection	6 button
Automatic A/D Adjustment (PC, Component, Composite (PAL, NTSC))	7 button
Self diagnostic display ON/OFF	9 button

Selecting the Adjusting Item

Every pressing of CH ▲ button in the service mode changes the adjustment items in the order of table below. (▼ button for reverse order)

SETTING & ADJUSTING DATA

[SERVICE MODE]

ADJUSTING ITEMS AND DATA IN THE SERVICE MODE:

Note:

The image system data of RCUT-BDRV is different by each image format.

The PAL value is indicated in the table.

Never adjust H.POS and V.POS except PAL/WIDE mode.

Item	Name of adjustment
RCUT	R CUT OFF
GCUT	G CUT OFF
BCUT	B CUT OFF
RDRV	R DRIVE
GDRV	G DRIVE
BDRV	B DRIVE
BRTC	BRIGHTNESS CENTER
COLC	COLOR CENTER
UVTT	BASE BAND TINT
CNTX	CONTRAST MAX
VOLUX	MAX VOLUME LIMITED
PLLW0	PLL WAIT TIME
PLLW1	PLL WAIT TIME
PLLW2	PLL WAIT TIME
PLLW3	PLL WAIT TIME
PLLW4	PLL WAIT TIME
PLLW5	PLL WAIT TIME
OPT1	TV SET OPTION 1
OPT2	TV SET OPTION 2
OPT3	TV SET OPTION 3
OPT4	TV SET OPTION 4 (PANEL OPT DATA FOR VENDOR)
OPT5	TV SET OPTION 5 (PANEL OPT DATA FOR SIZE)
OPT6	TV SET OPTION 6 (HOTEL MODE)
OPT7	TV SET OPTION 7 (HOTEL MODE)
OPT8	TV SET OPTION 8 (HOTEL MODE)
TVOP	TV SET OPTION
ID	MODEL ID
BDWID	BORDER WIDTH FOR EXACT SCAN
BDHIT	BORDER HEIGHT FOR EXACT SCAN

Factory preset data will be loaded after setting Model ID data.

(Refer to Initialization of Memory Data of QA02 and setting data of signal board.)

Adjusting the Data

Pressing of VOLUME  +/- button will change the value of data in the range from 00H to FFH. The variable range depends on the adjusting item.

I2C Bus Off

Turn off I2C communication between IC700 and IC400.

- 1) Press and hold the CALL button on the remote control, then press the Volume  + button on the TV.
- 2) Display "BUS Off" OSD.
- 3) I2C communication turned off.

Note:

To return Bus on status, press and hold the CALL button on the remote control, then press the Volume  + button on the TV again. TV will be turned off and automatically turned on, then status will be Bus On.

Setting TVOP

Enter to service mode and select menu of TVOP by pressing P▲ or P▼ during display of adjustment menu. After selecting TVOP, press  + or  - to set I2C check function to disable or enable as below.

TVOP	FUNCTION DESCRIPTION	1	0 (Normal)
D5 (bit5)	I2C check between IC700 and IC400. (WDT)	Disable	Enable

Setting Panel Option Data

Panel option data is subject to OP4 and OP5.

Enter to service mode and select menu of OPT4 or OPT5 by pressing P▲ or P▼ during display of adjustment menu. After selecting OPT4 or OPT5, press ▲ + or ▼ - to set OPT4 or OPT5 value as table below.

Panel option data

Series		Model name	Panel vendor	OPT4 value	OPT5 value
CV504D/505D/ 500P/501P	EU Digital	32CV504D/505D	(SAM)	0x06	0x45
		37CV504D/505D	(LPL)	0x01	0x66
		42CV504D/505D	(LPL)	0x01	0x67
		32CV500P/501P	(SAM)	0x06	0x45
		37CV500P/501P	(LPL)	0x01	0x66
		42CV500P/501P	(LPL)	0x01	0x67

OP4

Ex. OPT4 value 0x05 indicates that panel vendor is AUO AMVA.

		OPT4							
		D7 (bit7)	D6 (bit6)	D5 (bit5)	D4 (bit4)	D3 (bit3)	D2 (bit2)	D1 (bit1)	D0 (bit0)
Panel vendor	LPL	-	-	-	-	0	0	0	1
	SHP	-	-	-	-	0	0	1	0
	CMO	-	-	-	-	0	0	1	1
	AUO PMVA	-	-	-	-	0	1	0	0
	AUO AMVA	-	-	-	-	0	1	0	1
	SAMSUNG	-	-	-	-	0	1	1	0
	IPS	-	-	-	-	0	1	1	1

OP5

Ex. OPT5 value 0x06 indicates that panel size is 37.

[illegible]

Inch size	26	-	-	-	-	0	0	1	1
	32	-	-	-	-	0	1	0	1
	37	-	-	-	-	0	1	1	0
	42	-	-	-	-	0	1	1	1
Backlight Status Logic	Positive	-	-	1	-	-	-	-	-
	Negative			0					
Backlight Status Check	Execute	-	1	-	-	-	-	-	-
	Unexecuted		0						

Convert from Bit (Binary) to Hex

The table for converting from bit (D7-D0) to hex (0x**).

		BIT (Binary)			
High nibble		D7	D6	D5	D4
Low nibble		D3	D2	D1	D0
HEX	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
	8	1	0	0	0
	9	1	0	0	1
	A	1	0	1	0
	B	1	0	1	1
	C	1	1	0	0
	D	1	1	0	1
	E	1	1	1	0
	F	1	1	1	1

E.g. If Bit D7-0 = 0101 1010, Hex data is 0x5A.

Exit from Service Mode

Pressing POWER button to turn off the TV once.

Initialization of Memory Data of QA02 and Setting Data of Signal Unit

After replacing QA02 or signal board, the following initialization is required.

CAUTION: Never attempt to initialize the data unless QA02 has been replaced.

Whenever using new signal board to the set, setting the Model ID data according to Panel option data.

- 1) Enter the service mode.
- 2) Select menu of ID by pressing P▲ or P▼ during display of adjustment menu in the service mode.
- 3) Change ID data into MODEL ID to initialize by pressing ◀+ or ▶-, refer to table below.
- 4) Press and hold the CALL button on the remote control, then press the CHANNEL ▲ button on the TV.
- 5) Initialization progress dialog including model name and panel vendor is shown. Progress status is "WRITING".
- 6) Progress status is changed "OK" and power cycle (automatically). Then QA02 initialization has been completed.
- 7) Enter the service mode and select version check mode. Confirm if model name and model id set is correct. If not, repeat steps 1) to 6).

Note:

In case initialization by setting wrong MODEL ID is done, there is a possibility of abnormal display.

8) Set I2C check function of TVOP to enable.

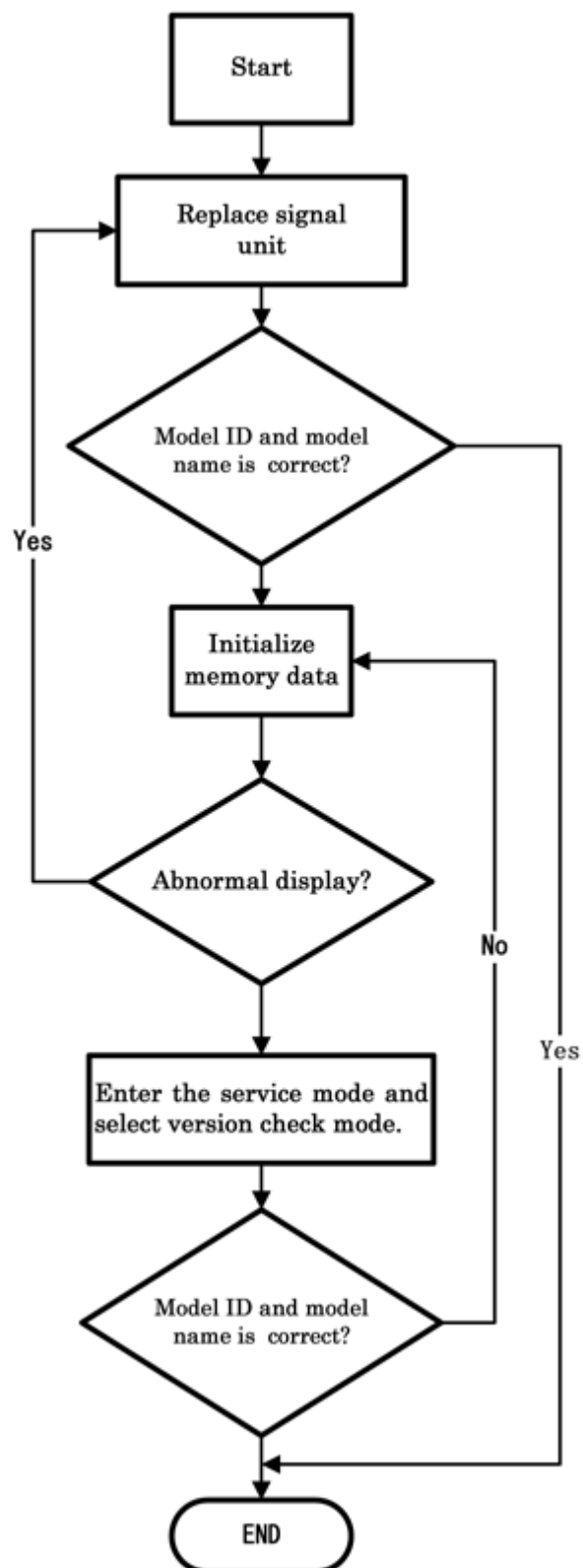
9) Check the picture carefully. If necessary, adjust any adjustment item above.

Perform "Auto tune" on the owner's manual.

MODEL ID (HEX)	Model name	Panel vendor
0x01	32CV504D/505D	SAM
0x02	37CV504D/505D	LPL
0x03	42CV504D/505D	LPL
0x04	32CV500P/501P	SAM
0x05	37CV500P/501P	LPL
0x06	42CV500P/501P	LPL
0x07		
0x08		
0x09		
0x10		
0x11		
0x12		
0x13		
0x14		
0x15		
0x16		
0x17		
0x18		
0x19		
0x20		
0x21		
0x22		
0x23		
0x24		
0x25		

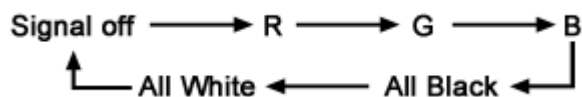
0x26		
0x27		
0x28		
0x29		
0x30		
0x31		
0x32		
0x33		

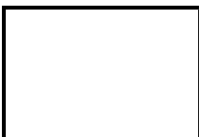
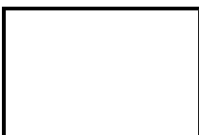
Initializing Data setting flowchart after replacing the Signal Unit



Test Signal Selection

Every pressing of  button on the remote control changes the built-in test patterns on screen as described below in Service Mode.



Picture	Signal
	Red raster
	Green raster
	Blue raster
	All Black
	All White

Self Diagnostic Function

1. Press "9" button on remote control during display of adjustment menu in the service mode. The diagnosis will begin to check if interface among IC's is executed properly.
2. During diagnosis, the following displays are shown.

* Self check display and Item are subject to the models.

Self check	
(1)	Firmware : AAAA_BB_0000
(2)	Time : 000000
(3)	BL_STATUS : 00
(4)	Bus line : OK
(5)	Bus cont : CXA2189Q(90H)
(6)	Block : UV V1 V2 V3 V4 V5 V6 V7 V8 V9 PC YUV DTV

(1) Firmware :

Version information of microprocessor

Series name (AAAA) and market area (BB) and software program version (0000)

(2) Time : Total hour of turn the TV on. (Unit : H)

(3) BL_STATUS :

Counter for saving BackLight on error.

This value is counted till 99 (Decimal).

(4) Bus line : -- "OK" is normal

SCL-GND (Red indication) : SCL-GND short circuit

SDA-GND (Red indication) : SDA-GND short circuit

SCL-SDA (Red indication) : SCL-SDA short circuit

(5) Bus cont : --- "OK" is normal.

NG is abnormal (Red indication).

When the abnormal status is detected, type name of semiconductor is indicated in red colour.

(6) Block

UV : TV reception mode

V1 - V9 : VIDEO 1-9 input mode

PC : PC mode

YUV : YUV mode

DTV : DTV mode

UV	ATV
V1	① 1 (SCART (FULL))
	② 2

V2	(SCART (S+AV))
V3	 3 (Composite/Component/S)
V4	HDMI1
V5	HDMI2
V6	HDMI3
V7	PC
V8	--
V9	--
PC	--
YUV	--
DTV	DTV (Digital Only)

Version Check Mode

1. Press "9" button twice on remote control during display of adjustment menu in the service mode.
The version of main MPU will be checked.
2. During Version Check, the following displays are shown.

* Version check display and Item are subject to the models.

Version check						
(1)	MAIN MPU	: AAAA_BB_0000(C00)				
(2)	EEPROM	: 00(MODEL ID = 00)				
(3)	SUB MPU	: 00(NO RTC)/00(RTC)				
(4)	OPTION	: 00 11 22 33 44 55 66 77 88				
(5)	HDMI EDID	: CH1:OK CH2:OK CH3:OK				
(6)	DB SW Ver	: 0.00				
(7)	DB MW Ver	: 0.00/0.00				
(8)	A/D Adjust	:	COMP	PC	NTSC	PAL
		MAIN	OK	NG	OK	NG
		SUB	—	—	OK	NG
(9)	100Hz/120Hz	: 0000				
(10)	DRMA0000-REV00					
(11)	12345678	MODELNAME		DDD-00(EEE)		
		(12)	(13)			

(1) MAIN MPU :

Version information of microprocessor

Series name and Code Program Version (4 figure number) and OSD Version (2 figure number).

(2) EEPROM :

Version information of EEPROM : Display 1 byte data.

(3) SUB MPU :

Version information of SUB MPU : Display 1 byte data.

Left side means QF01 (for AV-LINK) micon software version.

Right side means QA01 (for CEC) micon software version. (Only CEC model)

(4) OPTION :

Option information : Display six numbers of 1 byte data.

(5) HDMI EDID :

EDID data check item. Display channel numbers depend on HDMI input numbers.

OK : EDID data is enable.

NG : EDID data is disable.

(6) SW Ver

Version information of DB software as Toshiba release. (Only digital model.)

(7) MW Ver

Left side is Application and UI version information of DB software. (Only digital model.)

Right side is Firmware (Driver) version information of DB software. (Only digital model.)

(8) A/D Adjust

A/D adjustment item.

--MAIN : It's enable only in double Window model. A/D adjustment status of main picture.

--SUB : It's enable only in double Window model. A/D adjustment status of sub picture.

--COMP : Component input

--PC : PC input

--NTSC : NTSC (60 Hz) SD signal (composite input).

--PAL : PAL (50 Hz) SD signal (composite input).

--OK : A/D adjustment set correctly.

--NG : A/D adjustment set incorrect.

-- : A/D adjustment is not needed. Because its picture format isn't used.

(9) 100 Hz FPGA Software Version

It's enable only in 100 Hz drive panel model.

(10) Memory Data Version

Version information of EEPROM.

DRMA***** means model number of EEPROM.

REV** means version of EEPROM.

(11) CD number

CD information (ascii code). : Display 4 byte data.

(12) Model Name

Model name information (ascii code). : Display 7 byte data.

(13) LCD Panel Vendor information display

The following Panel Vender (DDD) and screen size (00) and resolution (EEE) are displayed.

Example : AUO-32 (1080p) indicates that Vender is AUO and Screen Size is 32 inch and Full HD panel.

Status Check Mode

1. Press "9" button thrice on remote control during display of adjustment menu in the service mode.

The status of this model will be checked.

2. During Status Check, the following displays are shown.

* Status check display and Item are subject to the models.

Status check		
(1)	MAIN	: ***** ***** *****
(2)	MAIN FORMAT	: 1080i-60
(3)	MAIN PLL	: 00 11 22 33 44
(4)	SUB	: ***** ***** *****
(5)	SUB FORMAT	: 576i
(6)	SUB PLL	: 00 11 22 33 44
(7)	SCREEN SIZE	: Super live
(8)	OTHER STATUS	: 0000 0000 0000

- (1) MAIN :

Main source information :

Display RF position number (0 - 99) on the main screen, or Input Source (EXT1/2/3/HDMI etc.)

- (2) MAIN FORMAT :

Display Video and PC format information

- (3) MAIN PLL :

Main PLL information : Display 1 byte data at five.

- (4) SUB :

Sub source information :

Display RF position number (0 - 99) on the Sub screen, or Input Source (EXT1/2/3/HDMI etc.)

This item displays only Double window model.

- (5) SUB FORMAT :

Display Video and PC format information

This item displays only Double window model.

- (6) SUB PLL :

Sub PLL information : Display 1 byte data at five.

This item displays only Double window model.

(7) SCREEN SIZE :

Display the screen size as follows.

Exact Scan
Wide
Super Live 2
Cinema 2
4:3
Super Live 1
Cinema 1
Subtitle
14:9

Note:

Exact Scan is shown only for 1080p panel model with video input mode except pc.

(8) OTHER STATUS :

Other status information : Display three numbers of 2 byte data.

Setting Hotel Mode

Enter to service mode and select Hotel Mode menu by pressing P▲ or P▼.
After selecting Hotel Mode, press  + to enter details setting in Hotel Mode.

To select menu, press P▲ or P▼ and press OK to enter the adjustment menu of table bellow.
To move the cursor in the adjustment, press  + or .

1. By pressing P▲ or P▼, OPT2 setting will change the value either 1 or 0 on selected items as follows;

OP2

OPT2	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7)	- (no use)	-	-
D6 (bit6)	Enable mode that TV On will be appeared in forced when turning the main power ON	Enable	Disable
D5 (bit5)	FRONT Key	Disable	Enable

D4 (bit4)	All keys except input selector key (Video/TV)	Disable	Enable
D3 (bit3)	User remote control operation	Disable (Service mode and Supere User mode may possible to setting only)	Enable
D2 (bit2)	Disable SET UP MENU except language. (tuning SETUP MENU)	Disable (Display the language only)	Enable
D1 (bit1)	Disable SETUP MENU	Disable	Enable
D0 (bit0)	HOTEL Mode	On (Enable the setting of D1 from to D7)	Off (Normal)

VOLUX

Set VOLUX as following.

- 1) Set speaker volume to 100. (Any value is OK, but 100 is better to check sound level.)
- 2) Down value of VOLUX until finding suitable sound volume level.

VOLUX	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7) ~ D0 (bit0)	Max Limiter of Volume Control	0x00 ~ 0x7F (Normal: 0x7C)	

OP6

OPT6	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7)	Enable mode that POS or VIDEO program number will be appeared in forced when turn ON the main power	Enable	Disable
D6 (bit6) ~ D0 (bit0)	POS or VIDEO program number	0 ~ 127 [decimal] (Normal: 0) POS number: 0 ~ 99 VIDEO number: 100 ~ 127 (DTV = 100, VIDEO = 101, VIDEO = 102..) 100 is used as ATV when	

		DTV option is disable.
--	--	------------------------

OP7

OPT7	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7)	Enable mode that speaker volume will be set in forced when turn ON the main power	Enable	Disable
D6 (bit6) ~ D0 (bit0)	Forced speaker volume	0 ~ 100 [decimal] (Normal: 0) Value above 100 is no effect.	

OP8

OPT8	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7) ~ D3 (bit3)	- (no use)	-	-
D2 (bit2)	Enable mode that picture mode will be set in forced when turn ON the main power	Enable (Display the language only)	Disable
D1 (bit1) ~ D0 (bit0)	Forced picture mode	0 [dec]: Dynamic (mode-1) (Normal) 1 [dec]: Standard (mode-2) 2 [dec]: Mild (mode-3) 3 [dec]: Memory (mode-M)	

LED Indication

The Green and Red LEDs on the TV (at the bottom center of the TV) indicate the TV's status, as described below.

- ┆ Red ON (solid) and Green OFF = The TV power cord is plugged in.

PANEL IDENTIFICATION

Panel Identification

If the several panels are alternatively used in the same model without amending the model name, the identification marking will be shown at the last digit of the set serial number on the specification label on the back cover.

In servicing, do not alter the panel because several setting and parts are different.

Marking	Panel Vendor	Marking	Panel Vendor	Marking	Panel Vendor
A	AUO	J		S	SHARP
B		K	SAMSUNG	T	
C	CMO	L	LPL	U	
D		M		V	
E		N		W	
F		P		X	
G		Q		Y	
H	IPS	R		Z	

With this alternative use, some of key parts may differ and their combinations are indicated with the suffix marking on the location number in the part list (Miscellaneous).

e.g.

Location No.	Part No.	Description
B001A	75007869	LCD Panel, 32" LPL
B001B	75007870	LCD Panel, 32" AUO
MZ01A	75006036	LDVS Cable
MZ01B	75007893	LDVS Cable

SPECIFICATION

DVB-T Broadcast systems/channels		Broadcast systems/channels	
UK	UHF 21-68	PAL-I	UHF UK21-UK69
France	VHF 05-10 (VHF 01-05) UHF 21-69	PAL-B/G	UHF E21-E69 VHF E2-E12, S1-S41
Germany	VHF 05-12 UHF 21-69	SECAM-L	UHF F21-F69 VHF F1-F10, B-Q
Austria	VHF 05-12 UHF 21-69	SECAM-D/K	UHF R21-R69 VHF R1-R12
Switzerland	VHF 05-12 UHF 21-69		
Italy	VHF 05-12 (D,E,F,G,H,H1,H2) UHF 21-69		
Spain	UHF 21-69		
Netherlands	VHF 05-12 UHF 21-69		
Sweden	VHF 05-12 UHF 21-69		
Finland	VHF 05-12 UHF 21-69		
Greece	VHF 05-12 UHF 21-69		

Video Input PAL, SECAM, NTSC 3.58/4.43

External connections

EXT1	Input	21-pin SCART	RGB, A/V
EXT2	Input	21-pin SCART	A/V, S-video
EXT3	Input	Phono jacks Phono jacks	Y, P _B /C _B , P _R /C _R Audio L + R
EXT3	Input (Side)	Phono jack Phono jacks	Video, S-video Audio L + R

HDMI 1/2	Input	HDMI™ (Audio LIP SYNC supported)		
HDMI3	Input (Side)	HDMI™ (Audio LIP SYNC supported)		
PC	Input	Mini D-sub 15-pin Analog RGB signal		
PC/HDMI1 Audio		3.5mm mini jack	Audio	
Digital Audio Output (S/PDIF)		Optical		
Output to Active Super Woofer		Phono jack		
Fixed Audio Output		Phono jacks	Audio L + R	
Stereo		Nicam 2 carrier system		
Visible Screen Size (approx.)	Model	32	80cm	
		37	94cm	
		42	107cm	
Display		16:9		
Sound output (at 10% distortion)		Main 10W + 10W		
Power consumption as specified in EN60107-1 : 1997	Model	32	141W	
		37	173W	
		42	207W	
Standby (approx.)	Model	32	0.7W	
		37	0.7W	
		42	0.7W	
Dimensions (approx.)	Model	32	56cm (H) 79cm (W) 25cm (D)	
		37	63cm (H) 90cm (W) 25cm (D)	
		42	69cm (H) 101cm (W) 26cm (D)	
		(Height dimension includes foot stand)		
Weight (approx.)	Model	32	16.6kg	
		37	20.6kg	
		42	26.7kg	
Headphone socket		3.5mm stereo		
Accessories		Remote control 2 batteries (AAA, IEC R03 1.5V) Clip Cleaning cloth (to clean the cabinet and control panel)		

Information

Before connecting any external equipment, turn off all main power switches. If there is no switch remove the mains plug from the wall socket.

Signal information for Mini D-sub 15 pin connector

Pin No.	Signal name	Pin No.	Signal name	Pin No.	Signal name
1	R	6	Ground	11	NC
2	G	7	Ground	12	NC
3	B	8	Ground	13	H-sync
4	NC*	9	NC	14	V-sync
5	NC	10	Ground	15	NC

* NC = not connected

Acceptable video signals through PC terminal

Format	Resolution	V. Frequency	H. Frequency	Pixel Clock Frequency
VGA	640 × 480	59.940Hz	31.469kHz	25.175MHz
		72.809Hz	37.861kHz	31.500MHz
		75.000Hz	37.500kHz	31.500MHz
SVGA	800 × 600	60.317Hz	37.879kHz	40.000MHz
		72.188Hz	48.077kHz	50.000MHz
		75.000Hz	46.875kHz	49.500MHz
XGA	1024 × 768	60.004Hz	48.363kHz	65.000MHz
		70.069Hz	56.476kHz	75.000MHz
		75.029Hz	60.023kHz	78.750MHz
WXGA	1280 × 768	59.995Hz	47.396kHz	68.250MHz
		59.870Hz	47.776kHz	79.500MHz
		74.893Hz	60.289kHz	102.250MHz
	1360 × 768	60.015Hz	47.712kHz	85.500MHz
SXGA	1280 × 1024	60.020Hz	63.981kHz	108.000MHz
		75.025Hz	79.976kHz	135.000MHz

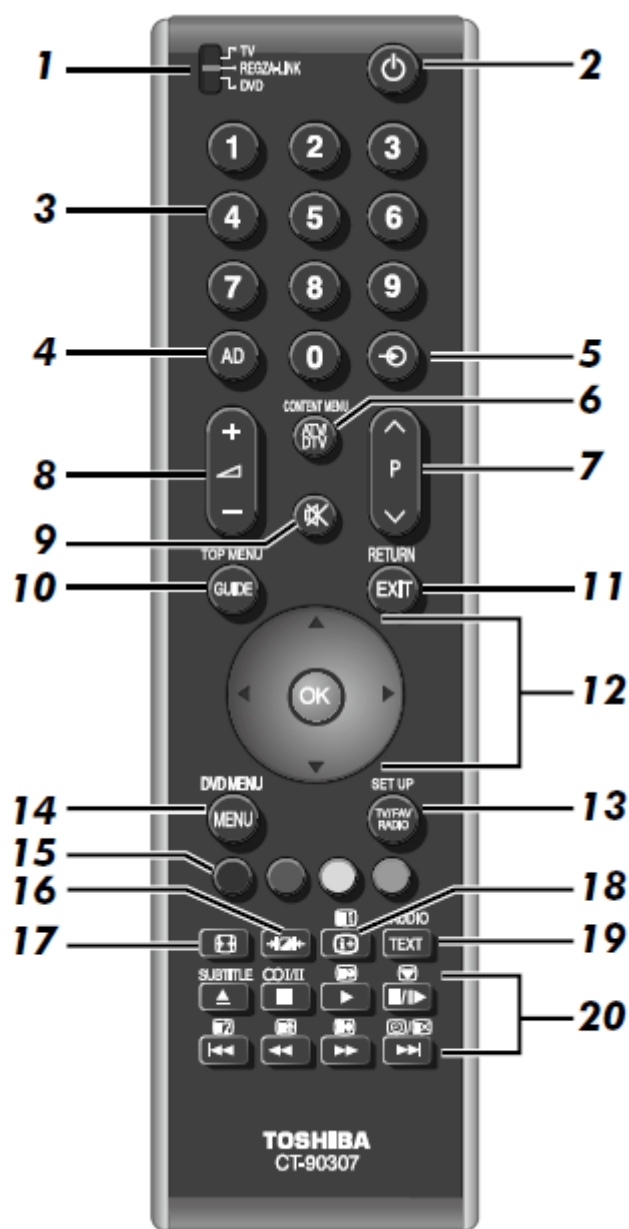
Acceptable video or PC signals through HDMI terminals

Format	Resolution	V. Frequency	H. Frequency	Pixel Clock Frequency
480i	720 × 480i	59.940/60.000Hz	15.734/15.750kHz	27.000/27.027MHz
576i	720 × 576i	50.000Hz	15.625kHz	27.000MHz
480p	720 × 480p	59.940/60.000Hz	31.469/31.500kHz	27.000/27.027MHz
576p	720 × 576p	50.000Hz	31.250kHz	27.000MHz
1080i	1920 × 1080i	59.940/60.000Hz	33.716/33.750kHz	74.176/74.250MHz
1080i	1920 × 1080i	50.000Hz	28.125kHz	74.250MHz
720p	1280 × 720p	59.940/60.000Hz	44.955/45.000kHz	74.176/74.250MHz
720p	1280 × 720p	50.000Hz	37.500kHz	74.250MHz
1080p	1920 × 1080p	59.940/60.000Hz	67.500kHz	148.500MHz
1080p	1920 × 1080p	50.000Hz	56.250kHz	148.500MHz
1080p	1920 × 1080p	24.000Hz	27.000kHz	74.250MHz
VGA	640 × 480	59.940Hz	31.469kHz	25.175MHz
		72.809Hz	37.861kHz	31.500MHz
		75.000Hz	37.500kHz	31.500MHz
SVGA	800 × 600	60.317Hz	37.879kHz	40.000MHz
		72.188Hz	48.077kHz	50.000MHz
		75.000Hz	46.875kHz	49.500MHz
XGA	1024 × 768	60.004Hz	48.363kHz	65.000MHz
		70.069Hz	56.476kHz	75.000MHz
		75.029Hz	60.023kHz	78.750MHz
WXGA	1280 × 768	59.995Hz	47.396kHz	68.250MHz
		59.870Hz	47.776kHz	79.500MHz
		74.893Hz	60.289kHz	102.250MHz
	1360 × 768	60.015Hz	47.712kHz	85.500MHz
SXGA	1280 × 1024	60.020Hz	63.981kHz	108.000MHz
		75.025Hz	79.976kHz	135.000MHz

FUNCTION AND OPERATION

The Remote Control

Simple at-a-glance reference of your remote control.



- 1 To select device mode (T/R/D)*
- 2 For On/Standby mode (T/R/D)
- 3 Number buttons (T/R/D)
- 4 To select Audio Description mode on/off (T)
- 5 To select external input sources (T)
To select line input (R/D)
- 6 To switch between ATV (analogue television) and DTV (digital television) (T)
To display Contents menu (R)
- 7 To change programme positions (T/R)
To change text pages (T)
- 8 To alter the TV volume (T/R/D)
- 9 To mute the TV sound (T/R/D)
- 10 To display the **digital** on-screen Programme Guide (T)
To access Top Menu (R/D)
- 11 To exit Menus (T)
To return to previous Menu (R/D)
- 12 When using menus the arrows move the cursor on the screen up, down, left or right.  to confirm your selection (T/R/D)
- 13 To switch between TV, Radio and Favourite programmes when in **digital** mode
To access Setup menu (R/D)
- 14 On-screen Menus (T)
DVD Menus (R/D)
- 15 Text and interactive service control buttons (T)
To work interactive service control on device (R)
- 16 Selectable picture preferences (T)
- 17 Widescreen viewing (T)
- 18 To display on-screen information (T/R/D)
To access index page in Text mode (T)
- 19 To call up text services in **analogue** mode and interactive services in **digital** mode (T)

20 When in TV mode:

- /EX Analogue time display
-  Picture still
-  I/II Stereo/bilingual transmissions
- SUBTITLE Digital Subtitles or Analogue TEXT Subtitle pages if available

When in Text mode:

-  To access Sub pages
-  To reveal concealed text
-  To hold a wanted page
-  To enlarge text display size
- /EX To select a page whilst viewing a normal picture

When using the Programme Guide:

-  - 24 hours
-  + 24 hours
-  - 1 page
-  + 1 page

REGZA-LINK or DVD mode:

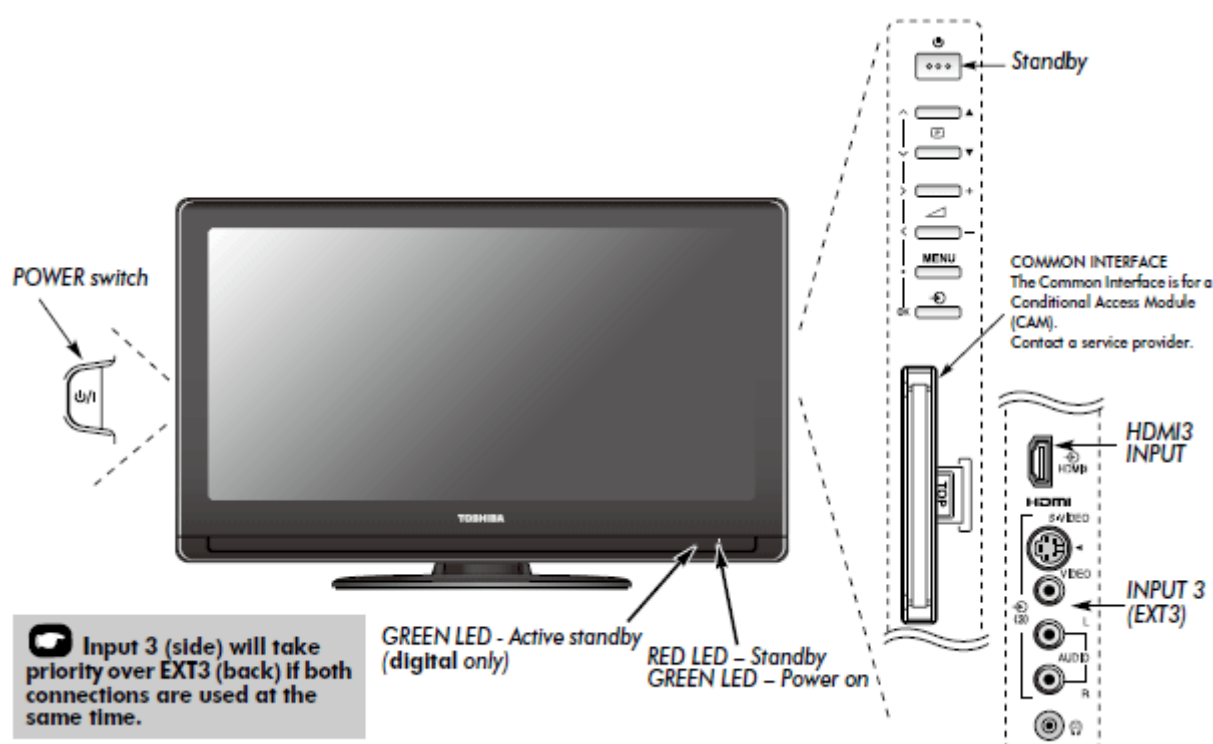
- press /II to PAUSE/STEP
- press  to PLAY
- press  to REWIND
- press  to FAST FORWARD
- press  to EJECT
- press  to STOP
- press  to SKIP-REWIND
- press  to SKIP-FORWARD

* T=TV mode, R=REGZA-LINK mode, D=DVD mode

FUNCTION AND OPERATION

Controls and Input Connections

A wide variety of external equipment can be connected to the input sockets on the side of the television. Whilst all the necessary adjustments and controls for the television are made using the remote control, the buttons on the television may be used for some functions.



Switching On

If the RED LED is unlit check that the mains plug is connected to the power supply and press the P/I (POWER) button on the left side of the television to switch the television on. If the picture does not appear press P/I on the remote control, it may take a few moments.

To put the television into Standby press P/I on the remote control, the GREEN active standby LED will appear (see 'Software Upgrade' section) next to the RED for a few moments then disappear. To view the television press P/I again. The picture may take a few seconds to appear.

Using the Remote Control

Press  on the remote control to see the menus.

In **digital** mode the menu bar at the top of the screens will show three different topics shown in symbols. As each symbol is selected by pressing the ◀ or ▶ button on the remote control, its respective options will appear below.

In **analogue** mode the menu appears as a list of six topics. As each symbol is selected by pressing ◀ or ▶ on the navigation ring on the remote control, its respective options will appear below.

To use the options, press ▲ and ▼ on the remote control to move up and down through them and , ◀ or ▶ to select the required choice. Follow the on-screen instructions. The functions of each menu are described in detail throughout the manual.

Using the Controls and Connections

To alter the volume press –  +.

To alter the programme position press ▼  ▲.

Press **MENU** and <, >, ^ or v to control the sound and picture options.

Press **MENU** twice to finish.

An S-video cable provides better picture performance than a composite video cable. If you connect an S-video cable to **EXT3**, be sure to disconnect the standard (composite) video cable or the picture performance will be unacceptable.

To select the external input, press  until the appropriate input source is selected.

Please always refer to the owner's manual of the equipment to be connected for full details.

FUNCTION AND OPERATION

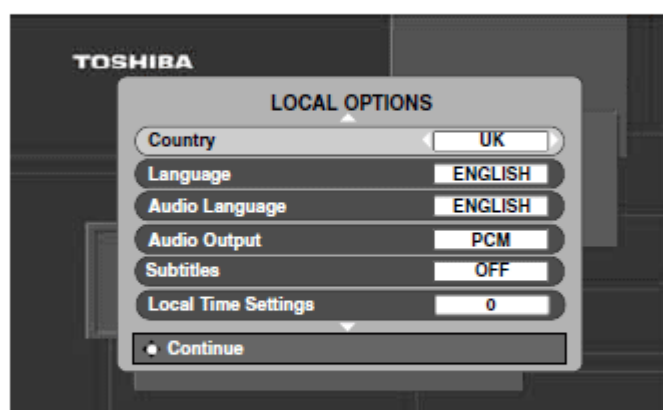
Tuning Digital Television

Before switching on the television put your decoder and media recorder to **Standby** if they are connected.

To set up the television use the buttons on the remote control.

Tuning for the First Time

- 1 Press the  button, the **LOCAL OPTIONS** screen will appear. This screen will appear the first time that the television is switched on and each time the television is reset.

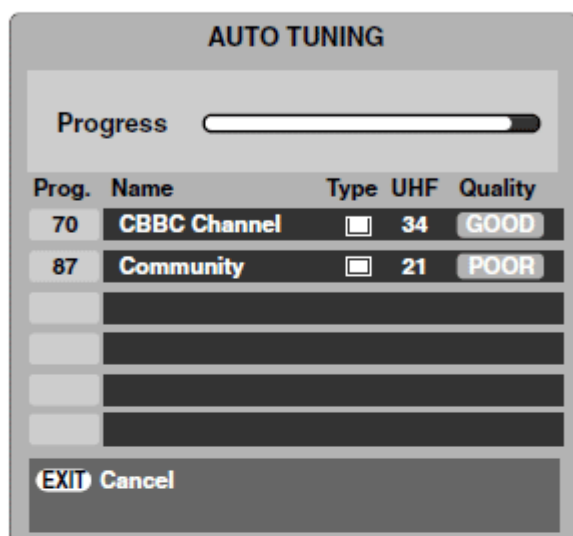


- 2 Press  to highlight **Country** and  or  to select. The television will now tune the stations for your country.
- 3 Using  highlight **Language**, then  or  to select.

- 4** Press **OK** to start tuning.

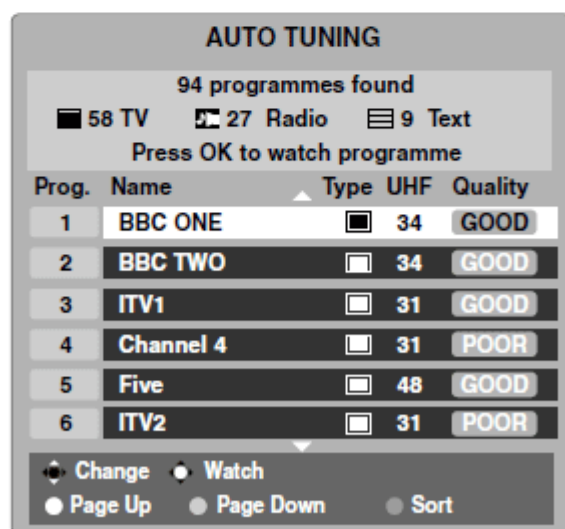
The **AUTO TUNING** screen will appear and the television will start to search for available stations. The progress bar will move along the line.

You must allow the television to complete the search.



When the search is complete the television will automatically select programme one.

The **AUTO TUNING** screen will display the total number of services found.



- 5** Use **▼** or **▲** to move through the list to select a programme then press **OK** to view.

NOTE: The time will be set automatically by transmission but can be advanced or decreased by up to 3 hours using **Local Time Settings**.

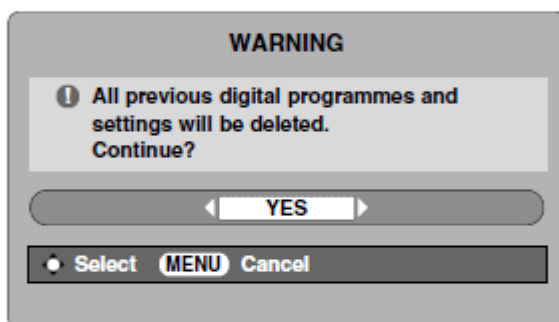
Digital Auto Tuning

NOTE: As new services are broadcast it will be necessary to re-tune the television in order to view them.

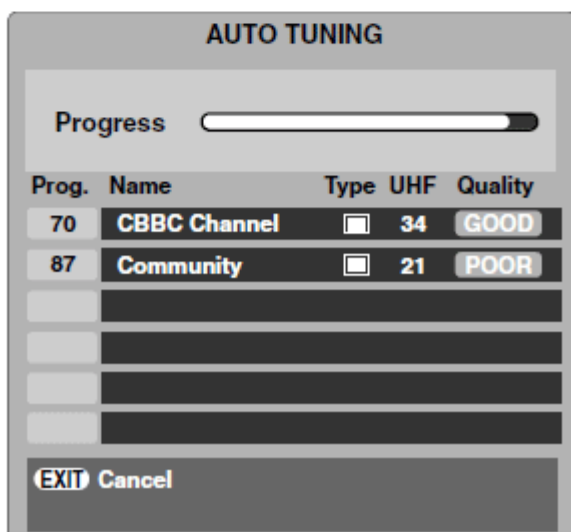
Auto tuning will completely re-tune the television and can be used to up date the channel list.

It is recommended that Auto tuning is run periodically to ensure that all new services are added. All current programmes and settings, i.e. favourites and locked programmes, will be lost.

- 1** Press , the **SETUP MENU** will appear. Use  to highlight **Auto tuning**. Press .
- 2** A screen will appear warning that previous digital programmes and settings will be deleted. Press  to continue with the **Auto tuning**.

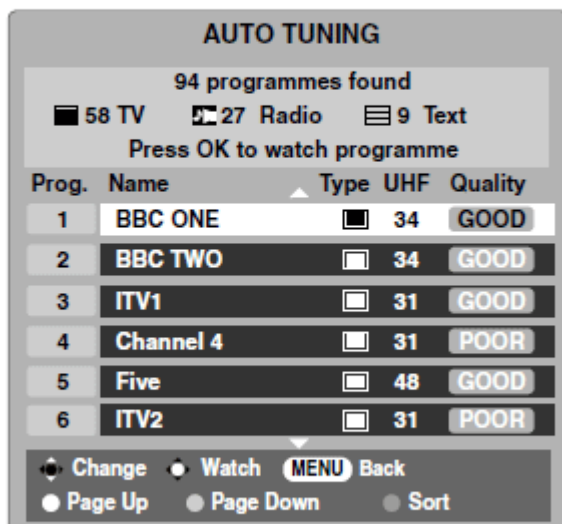


The television will start to search for all available stations.



You must allow the television to complete the search.

When the search is complete the **Auto tuning** screen will display the total number of services found.



- 3** Use ▼ or ▲ to move through the list to select a programme then press **OK** to view.

Analogue Switch-off

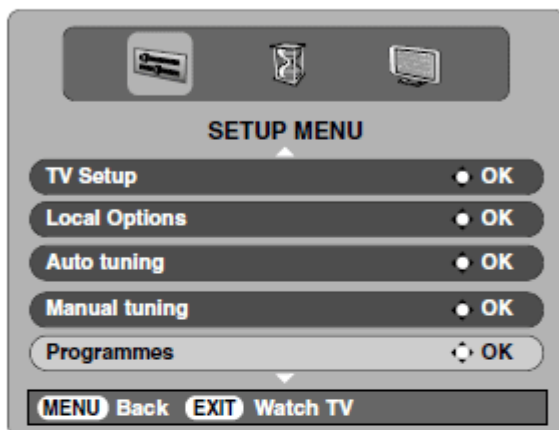
This is a **digital** television which is integrated to allow the use of both **digital** and **analogue** services. However, during the lifetime of this set it is very likely that **analogue** services will be switched off to allow for more new **digital** services.

This 'switch-off' will happen in a number of phases, which will be advertised in your area well in advance. It is recommended that at each phase the television is re-tuned to ensure that existing and new **digital** services can be viewed without disruption (see the 'Auto tuning' section).

Digital Programme Sorting

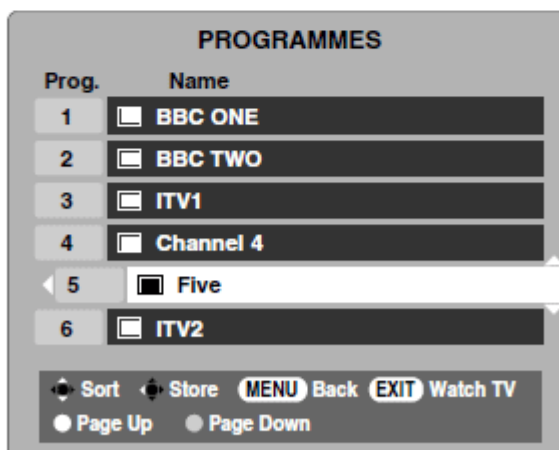
NOTE: When the television is switched off the mode being viewed at the time will automatically be selected when the television is switched back on.

- 1 The station order may be changed to suit personal preference. Press **MENU**, the **SETUP MENU** will appear on screen.
- 2 Use **▼** to move down through the list and highlight **Programmes**. Press **OK**.



- 3 With the list of stations now showing use **▼** or **▲** to highlight the station you want to move and press **►**.

The selected station will be moved to the right of the screen.



- 4 Use **▼** or **▲** to move through the list to your preferred position. As you do so the other stations will move to make room.
- 5 Press **◀** to store your move. Repeat as necessary, then press **EXIT**.

Digital Manual Tuning

This feature is available for service engineers or can be used for direct channel entry if the multiplex channel is known.

- 1** Select **Manual tuning** from the **SETUP MENU** and press **OK**.
- 2** Enter the multiplex number using the number buttons and then press **OK**. The television will automatically search for that multiplex.

When the multiplex is found any channels not currently on the programme list will be added and the programme information at the top of the screen will be updated.

- 3** Repeat as necessary. Press **EXIT** to finish.

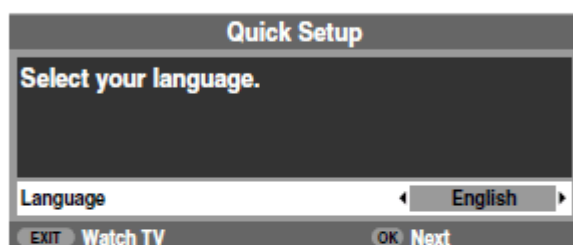
FUNCTION AND OPERATION

Tuning Analogue Mode

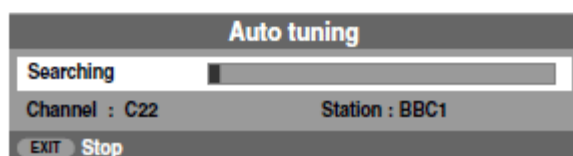
Quick Setup

The **Quick Setup** feature will tune all **analogue** channels currently available in the area. To put the television into **ATV** mode press the **ATV/DTV** button.

- 1 Select **ATV** mode. The **Quick Setup** screen will appear.



- 2 Using ◀ or ▶ select your **language**, then press (OK).
- 3 Then press ◀ or ▶ to select your **country**.
- 4 To start **Auto tuning** press (OK).



- 5** The search will begin for all available stations. The slide bar will move along the line as the search progresses.

You must allow the television to complete the search.

When the search is complete the television will automatically select programme position 1 and the **Manual tuning** screen will appear.

Manual tuning		
Prog.	Channel	Station
1	C22	BBC1
2	C28	BBC2
3	C25	ITV
4	C32	CH4
5	C68	
6	C69	
OK Select ▶ Sort MENU Back EXIT Watch TV		

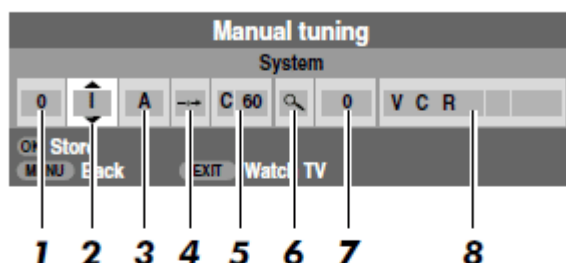
- 6** Use ▼ or ▲ to move through the list to select a programme then press **EXIT** to view.

The station order may be changed using the **Manual tuning** screen (see the **analogue** 'Sorting programme positions' section).

Manual Tune

The television can be tuned-in manually using **Manual tuning**. For example: if the television cannot be connected to a media recorder/decoder with a SCART lead or to tune-in a station on another **System**.

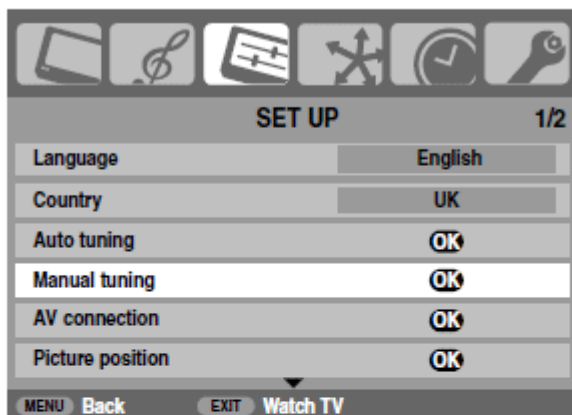
Use ◀ and ▶ to move across the screen and select any of these Manual Tune options.



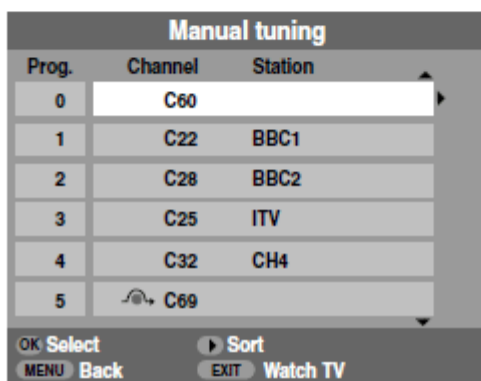
- 1 Programme:**
The number to be pressed on the remote control.
- 2 System:**
Specific to certain areas.
- 3 Colour system:**
Factory set to Auto, should only be changed if problems are experienced, i.e. NTSC input from external source.
- 4 Programme skip:**
↔ means nothing has been stored or the facility to skip the channel is ON.
- 5 Channel:**
The channel number on which a station is being broadcast.
- 6 Search:**
Search up and down for a signal.
- 7 Manual fine tuning:**
Only used if interference/weak signal is experienced.
- 8 Station:**
Station identification. Use the ▲ or ▼ and ◀ or ▶ buttons to enter up to seven characters.

To allocate a programme position on the television for a decoder and media recorder: turn the decoder on, insert a pre-recorded film in the media recorder and press PLAY, then manually tune.

- 1 Press **MENU** and using **◀** or **▶** select the **SET UP** menu, with **▼** highlight **Manual tuning**, press **OK** to select.

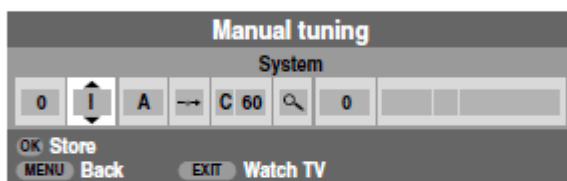


- 2 Use **▲** or **▼** to highlight the programme position required e.g. we suggest **Prog. 0** for a media recorder.

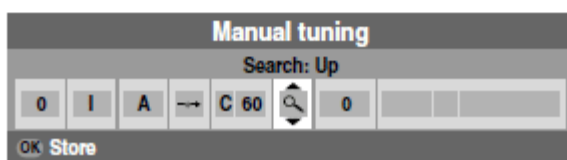


Different **Channel** numbers may be displayed.

- 3 Press **OK** to select. If the programme is skipped, **Programme skip** must be removed before storing.



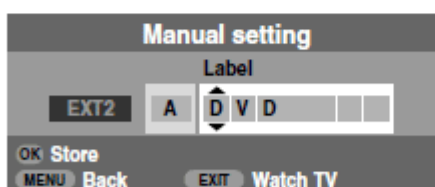
- 4 Press **▶** to select **System** and use **▲** or **▼** to change if required.
- 5 Then press **▶** to select **Search**.
- 6 Press **▲** or **▼** to begin the search. The search symbol will flash.



- 7 Each signal will show on the television, if it is not your media recorder, press ▲ or ▼ again to restart the search.
- 8 When your media recorder signal is found, press ► to move along to **Station**. With ▲, ▼, ◀ and ▶ put in the required characters, e.g. **VCR**.



- 9 Press **OK** to store.
- 10 Repeat for each **programme position** you want to tune or, press **MENU** to return to the list of channels and select the next number to tune.
- 11 Press **EXIT** when you have finished.
- 12 To name external equipment, e.g. DVD on EXT2, press ◀ to select ◀2, then select **Manual setting** from the **SET UP** menu.
- 13 Press ► to select **Label** then using ▲, ▼, ◀ and ▶ put in the required characters.



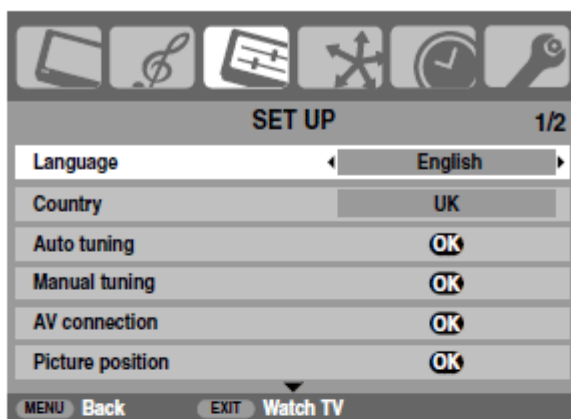
PLEASE NOTE

This television has direct channel entry if the channel numbers are known.

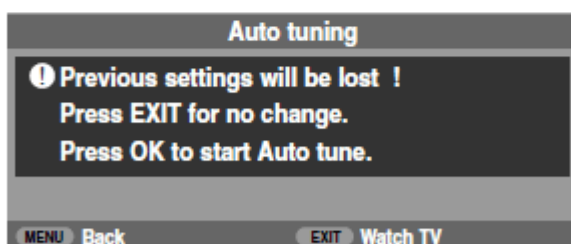
Select the **Manual tuning** screen in **Step 3**. Enter the **Programme number**, the **System**, then **C** for standard (terrestrial) channels or **S** for cable channels and the **Channel number**. Press **OK** to store.

Using Auto Tuning

- 1** To set up the television using **Auto tuning**, press  and use ◀ or ▶ to select the **SET UP** menu.



- 2** Press ▼ to highlight **Language** and ◀ or ▶ to select.
- 3** Using ▼ highlight **Country**, then ◀ or ▶ to select. The television will now tune the stations for your country.
- 4** Press ▼ to highlight **Auto tuning**, then press .



- 5** To start **Auto tuning** press .

You must allow the television to complete the search.

When the search is complete the television will automatically select programme position 1. This may not be a clear picture, so the station order can be changed (see 'Sorting programme positions' section).